

Effect of ZnO nanofiller on dielectric and mechanical properties of PVA/PVP blend

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Effect of ZnO Nanofiller on Dielectric and Mechanical Properties of PVA/PVP Blend

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Abstract. PVA/PVP (50/50) blends filled with various concentrations of ZnO nanofillers (0, 2,4,8,12,16 wt %) have been prepared using solvent casting technique using an ultrasonicator. The UTM results suggest that the Young's Modulus of the pure blend is 334.34 MPa and that of the blend with 16 wt% ZnO is 1623.80 MPa. The AFM studies indicate that the surface roughness of the films increased upon doping. The dielectric studies carried out using Keithley 4200-SCS Parameter Analyzer reveals that the dielectric properties of PVA/PVP blends were enhanced upon addition of ZnO nanofillers up to a concentration of 8 wt% ZnO. The dc conductivity studies carried out by Keithley 4200-SCS Parameter Analyzer reveals that the conductivity of pure blend is 2.92×10^{-11} S/cm and the blend consisting of 8 wt% ZnO nanofiller has a conductivity of 3.04×10^{-9} S/cm. There is a significant enhancement in the dielectric and mechanical properties of the blend upon the addition of ZnO nanofillers. These improvements in the properties of the blend upon the addition of ZnO nanofillers make it a suitable material for device applications.

INTRODUCTION

Polymer blending is a unique method to modify the properties of a polymer. When two or more polymers blended together the final product will have attractive properties which the parent polymer may not exhibit. Hence this technique is used to design new materials with various properties. Blending of polymers depends on the miscibility of the polymers in suitable solvents [1]. Poly vinyl pyrrolidone(PVP) is an amorphous polymer with good dielectric constant, high polarity, solubility in water, biodegradability, transparent, low toxicity, compatibility in solution and film form. Poly Vinyl Alcohol (PVA) is a biodegradable, water-soluble, nontoxic semi crystalline nature polymer with good charge storage capacity and dielectric strength. When PVA and PVP are mixed the interaction between them takes place through hydrogen bonding formed between the carbonyl group of PVP and hydroxyl group of PVA [1-3]. These polymers exhibit good film formation ability.

In order to enhance the properties of polymer blends various nanofillers have been successfully added to the polymers by various researchers. Among these nanofillers, transitional metal ions play a major role due to its applications in optics, photonics, and electronics. Zinc Oxide (ZnO) nanoparticles are chosen here as nanofillers since it is one of the promising materials for many device applications including the fabrication of optoelectronic devices. It is a wide band gap semiconductor with an energy gap of 3.37eV [4]. Blending of the polymers with transitional metal ions like zinc oxide nanoparticles is an area of interest due to its applications in optics, photonics, and electronics [5]. In this paper solvent casting method is used to prepare PVA/PVP blend with various concentrations of ZnO nano fillers. The effect of ZnO nano fillers on the mechanical and dielectric properties of the polymer blend has been discussed.

Facile Synthesis and Characterisation of Nanocomposite Doped Chitosan—Polystyrene Polymer Blends



Naveen Praveen Mascarenhas, Jenice Jean Goveas,
Richard Adolf Gonsalves, T. Chandra Shekara Shetty
and Vincent Crasta

1 Introduction

A polymer may be a natural or synthetic macromolecule comprised of repeating units of smaller molecules called monomers. The process of Polymerization involves formation of covalent bonds between the individual monomers giving rise to the polymer. Condensation polymerization occurs by loss of small molecules from the monomers which joint together. A polymer composite is a composite material containing polymers, or polymers along with other kinds of materials. The research dealing with polymer composites have reinforced the growing need of new materials with novel properties which can be modified for functional applications in, agriculture, industry, medicine, etc. Many polymers are known to be suitable matrices in the development of composite structures because of the ease of production and processing. They possess good adhesion with reinforcing elements, are resistant to corrosive environment, and are light weight. This results in the numerous applications viz in sensor technology, as super capacitors, corrosion inhibitors and for electromagnetic shielding. Polymers can also be used in and batteries and actuators [1–6]. An interesting property of polymer composites is the ability to alter the electrochemical, optical, chemical and mechanical properties of conducting polymers by changing the monomer or dopant incorporated into the

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Enhancement of micro structural properties of PVA doped with MWCNT's and metal oxide nanocomposites films

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Enhancement of Micro Structural Properties of PVA Doped with MWCNT's and Metal oxide Nanocomposites Films

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Abstract. WO₃ nanoparticles were prepared by using precipitation method and the multiwall Carbon nanotubes (MWCNT's) were functionalized to make Carboxylated MWCNTs. Further, prepared WO₃ and carboxylated MWCNT were doped into PVA matrix by coagulation technique and PVA nanocomposites were prepared by simple solvent casting technique. The films were characterized by XRD, FTIR spectroscopy and AFM. FTIR spectroscopy reveals the intensity of absorption of radiation at 3624.55 cm⁻¹ corresponds to the OH group of PVA. It changes in accordance with dopant concentration causing inter/intra molecular hydrogen bonding between the dopants and PVA back bone which leads to the complex formation. XRD data explores the crystalline nature of the film. It is found that for doping concentration x= 7.5 wt% the percentage crystallinity and crystallite size increases whereas micro structural strain and dislocation density decreases. An atomic force microscopy topographic analysis proves that the doped particles have an average size less than 15 nm, as confirmed by XRD data. It was found that roughness of the sample varies with dopant concentration causing variation in crystallinity.

Keywords: Polymer, PVA, dopants, nanoparticles

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INTRODUCTION

Nowadays, Carbon nanotubes (CNT's) are proven to exhibit excellent optical and electrical properties with better chemical stability. In spite of these multiwall carbon nanotubes (MWCNT's) are considered as an excellent dopant material for the fabrication of nanostructured polymer composites with superior multi-functional characteristics [1]. The transition metal oxides nanoparticles (TMOs) like Tungsten oxide (wo₃) are also promising doping material for the various electrochromism, optics, catalyst and gas sensors applications [2]. Recent research articles have focused on the use of CNT's or metal oxides in polymer matrix composites. The simplest technique for preparation of polymer composite film is solution-casting method. The host polymer Poly vinyl alcohol (PVA) is preferred to prepare the polymer nanocomposite films due to its water-soluble, easily degradable and eco-friendly nature.

EXPERIMENTAL DETAILS

Carboxylated MWCNTs: Multi-walled carbon nanotubes (MWCNTs, 75 mg) procured from Sigma Aldrich, Germany (CVD, 95 % purity) is soaked in hydrochloric acid (HCl) for 24 hrs. Later the above substance is diluted with distilled water then filtered using filter membrane. The obtained residue MWCNTs were dried and further added in 40 mL solution of sulfuric acid (H₂SO₄) and nitric acid (HNO₃) taken in 3:1 volume ratio and sonicated by using probe ultrasonicator for 2 hours. Further excess distilled water is added to the dispersed solution and filtered using 0.1µm Whatman Nylon filter membrane. The neutral carboxylated MWCNTs (MWCNT-COOH) obtained is later dried in the vacuum oven.

Preparation of WO₃ Nanoparticles: The precipitation method is used for synthesizing WO₃ nanoparticles as reported by Cruz et al. [3]. The ammonium tungstate hydrate (H₄₂N₁₀O₄₂W_{12-x}H₂O) was dissolved using distilled water under continuous stirring kept at 90°C. After the complete dissolution

Structural, mechanical and optical properties of PVA doped with TiO₂ and ZnO nanoparticles

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Structural, Mechanical and Optical Properties of PVA Doped with TiO₂ and ZnO Nanoparticles

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Abstract: This article emphasizes the preparation of TiO₂, ZnO nanoparticles and PVA/(x)TiO₂(15-x)ZnO nanocomposites for x = 0%, 1%, 5%, 7.5%, 10%, 14% and 15% doping concentration via solution casting method. The micro structural studies of prepared nano films were studied using x-ray diffraction (XRD) technique. The UV – Visible spectra reveals the severe decrease in optical energy gap of nanocomposites for x=14% doping concentration. Universal testing machine (UTM) shows high tensile strength, stiffness and Young's modulus for x=14% doping concentration.

1. INTRODUCTION

In recent years, the nanoparticles have attracted wide scope in scientific field due to its unexpected outcomes in their molecular as well as atomic states [1]. Metal oxide nanoparticles proved to be one of the significant materials for device application due to its multifaceted properties [2, 3]. Zinc oxide nanoparticle (ZnO) is one of the cost effective nanoparticles having plethora of application in solar cells, photo catalysis, drugs and chemical sensors [4-6]. On the other hand, Titanium dioxide nanoparticles (TiO₂) also substantiates to be unsurpassed dopants owing to its plentiful benefits, such as economy, green environment, non-toxicity, high photo catalytic activity, optical and electronic properties, antibacterial activity and UV protection [7]. These nanoparticles when embedded on polyvinyl alcohol (PVA, MOWIOL10-98) matrix, they play a vital role in enhancing its properties [8]. The present paper deals with the preparation of PVA(x)TiO₂/(15-x)ZnO nanocomposites for x=0, 1, 5, 7.5, 10, 14 and 15wt% concentration via solvent casting method.

2. EXPERIMENTAL DETAILS

2.1 Preparation of Titanium Dioxide nanoparticles

The compounds used for the preparation of Titanium dioxide (TiO₂) nanoparticles were procured from Sigma Aldrich, Germany. Liquid A is prepared by mixing 8ml dibutyl phthalate with 20ml of absolute ethyl alcohol, kept in a temperature controlled magnetic stirrer with stirring rate 800rpm for an hour. Liquid B is prepared by dissolving 15g of ammonium sulphate in 60ml of de-ionized water and 6ml of Hydrochloric acid. Then liquid A is mixed with liquid B at temperature 850C and kept on magnetic stirrer at 600rpm until the solution becomes a complete turbid formation. Then ammonium is added drop wise till the turbid solution turns milky white. The solvent is allowed to deposit for 24 hours and clear solution is filtered. The residue at the bottom is washed recurrently with de-ionizing water till the pH of the solution turns neutral. Later the neutral residue is filtered using 0.1µm Whatman Nylon filter membrane. The obtained precursor is dried at 550°C muffle to bake for 2 hours to get titanium dioxide (TiO₂) nanoparticles.

2.2 Preparation of zinc oxide nanoparticles

The NaOH and Zn(NO₃)₂·6H₂O chemicals were procured from Sigma Aldrich, Germany. 40g of NaOH is dissolved in 1 litre of de-ionized water and heated up to 80°C kept in temperature controlled magnetic stirrer at

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Study of Structural, Optical and Photoluminescence Properties of ZnO Doped PVA/PVP Nanocomposite

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Abstract: We report preparation and characterization of ZnO doped PVA/PVP Polymer nanocomposites using solvent casting technique. The FTIR and XRD studies confirm the formation of polymer nanocomposites through the interaction taking place between the nanoparticles and the polymer. The optical energy gap of the doped polymer decreases with an increase in doping concentration. The photoluminescence studies reveal that the intensity of the peak is maximum for a doping concentration of 8% ZnO. The optical and photoluminescence properties of PVA/PVP blend are enhanced due to doping. This makes ZnO doped PVA/PVP a prominent material for device applications.

INTRODUCTION

The blending of different polymers helps to tailor the properties of the constituent polymers. This is a technique used to enhance the physical properties of polymers. The properties of these polymer blends can be enhanced by the addition of suitable inorganic particles. Such polymer blend films find application in fuel cells, electro-chromic devices, batteries of higher specific energy [1]. Polyvinylpyrrolidone (PVP) is a very good polymer with excellent properties like high polarity, biodegradability, transparent, solubility in water, cohesive and adhesive properties, high compatibility, good dielectric constant and low toxicity. It is amorphous in nature. Poly Vinyl Alcohol (PVA) is a nontoxic, biodegradable, water-soluble polymer with good dielectric strength and good charge storage capacity. It has high tensile strength. The hydroxyl groups present in PVA is the source of hydrogen bonding which helps in the formation of networks in the polymer composite. When PVA and PVP are mixed hydrogen bonding is formed between the carbonyl group of PVP and hydroxyl group of PVA [2]. Blending of these polymers with transitional metal ions like zinc oxide nanoparticles is an area of interest due to its applications in optics, photonics, and electronics [3-4]. In the present work, an inexpensive solvent casting method is used to prepare PVA/PVP nanocomposite with various concentrations of ZnO nanoparticles. The study has been conducted to investigate the changes happening in structural, optical and photoluminescence properties of the polymer films upon doping.

EXPERIMENTAL DETAILS

Preparation of nanocomposite

Polyvinyl Alcohol (PVA-average molecular weight 89000-98000) and ZnO nanopowder (particle size < 50nm) were procured from Sigma Aldrich. Polyvinylpyrrolidone (PVP, molecular weight 1,300,000) was procured from Alfa Aeser. 3g each of PVA and PVP were taken in separate beakers and dissolved in 90 ml distilled water and continuously stirred for one hour using a magnetic stirrer at a temperature of 90°C and 50°C respectively until a clear solution was obtained. These two solutions were mixed and stirring continued for two hours at room temperature. This solution was divided into six equal parts. Zinc oxide nanoparticles in the wt percentages of 0, 2, 4, 8, 12 and 16 were added to these solutions and stirred continuously. Solutions consisting of nano dopants were kept in an

Implementation of a Virtual Assistant for a Grocery Store using Natural Language Understanding

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Abstract— As people are becoming more digitally adept to the world around them, they try to maximize their efficiency of finding solutions by using their personal devices. In this day and age, it boils down to the simple fact that there are more people who would be more inclined to use their device to answer their questions. Keeping this in mind, the paradigm has shifted from a simple text based query to a more conversationally adept user interface. With the onset of chatbots and conversational AIs taking the world by storm, it is safe to say that this concept will become one of the most trending features based on user responsiveness and data accountability. The Virtual Assistant for the Grocery Store was developed with the aim of implementing a conversational AI for the users to discover everything that they could ask for with respect to a single grocery store.

Keywords— Chatbot, Conversational AI, Machine Learning, Natural Language Understanding, Virtual Assistant

I. INTRODUCTION

In an age where technological boom has branched to all fields of interest, one of the most versatile areas of exploration stems from Artificial Intelligence (AI).

At its core, AI is the development of machines that are capable of a human-level cognitive understanding for a given concept. Though the idea of an AI has been around for decades, it was only recently that more intricate developments have been put into action. One of the many concepts to arise from AI is machine learning. Machine learning is the implementation of a set of instructions by a system and understanding how these instructions can be performed better with or without human intervention. In today's world, machine learning itself has taken the technological era by storm with its versatile features. From finance to healthcare and everything in between, machine learning has become one of the founding steps for an unprecedented technological expansion.

Being highly diverse, machine learning branches out into multiple concepts, each with their own applications. The main focus in this paper will be on conversational AIs and how they can be implemented as a virtual assistant based on user input and dynamic parameters.

A conversational AI implements a one-to-one interaction between a user and their device. This makes communication between man and machine more interactive and enriches the development of a more reliable system. Conversational AIs have a more general purpose and are mostly used as an intermediate for small talks.

On the other hand, a virtual assistant is focused on a specific attribute of functionality. The main job of a virtual assistant is to streamline user interaction and fine tune the client's request on a specific platform and offer a more in depth response as compared to a simple conversational AI. The main advantage of a virtual assistant is that it is capable of handling more complex interactions on a specific concept that it was designed for better than a general purpose AI.

Keeping this in mind, the concept of developing a virtual assistant was to facilitate the functionalities that would be used for a specific application and utilized by an extensive number of people. For this reason, a grocery store fits both these prerequisites. By being unique enough that customers will ask specific questions and at the same time being diverse enough to be used by many customers, the Virtual Assistant for the Grocery store provides with the functionalities that you would find from a salesperson at the palm of your hand.

A COMPARATIVE ASSESSMENT ON TECHNIQUES OF AUTOMATED DYNAMIC MALWARE ANALYSIS

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Abstract— Malware is a combination of the word malicious and software. It has become a major intimidation in the internet today, so Antivirus vendors are confronted with a creation of malware samples. The prologue of new malware samples everyday is not uncommon. The malware designed by the attackers have the ability to change as they propagate. Moreover, the diversity and volume of their variants severely affects the traditional defenses that use signature based techniques. In this paper a literature work on the automated dynamic malware analysis is carried which is useful in the detection of malware. The tools and techniques required for the analysis process are mentioned by clearly depicting the characteristics, advantages and disadvantages.

Keywords— Malware, Dynamic malware analysis, Machine learning techniques, Benign software

I. INTRODUCTION

Malware essentially referred to as software that “deliberately fulfills the harmful intent of an attacker” [1]. However, these are intended to get access to computer system and steal network resources. Malware can be classified into different categories base on their malicious behavior. Viz. “Virus”, “Spyware”, “Worm” etc. The first instance of malicious software found is PC Virus Brain in 1986[2]. The motivation to such malware is to highlight the vulnerability in the system. Since then, the motivational change to financial benefits.

Malware is one of the most terrible and major security threats facing the Internet today. According to a survey, [28] conducted by FireEye in June 2013, 47% of the organizations experienced malware security incidents/network breaches in the past one year. As the malwares are continuously growing in volume (growing threat landscape), variety (innovative malicious methods) and velocity (fluidity of threats) [29], these are evolving, becoming more sophisticated and using multiple new ways to target computers and mobile devices. McAfee [30] catalogs over 100,000 new malware samples every day means about 69 new threats every minute or about one threat per second. With the increase in readily available and sophisticated tools, use of the new generation cyber threats/attacks is becoming more targeted, persistent and unknown. The advanced malwares are targeted, unknown, stealthy, personalized and zero day as compared to the traditional malwares which were broad, known, open and one time. Once inside, they hide, replicate and disable host protections. After getting installed, they call their command and control servers for further instructions, which could be to steal data, infect other machines, and allow reconnaissance. Antivirus (AV) software was introduced with an intention to prevent, detect and

remove malicious software. This effort mainly focused on content-based signatures to automatically classify and analyze malware samples. Unfortunately, these techniques are essentially susceptible to inaccuracies due to polymorphic and metamorphic techniques. As a result, the Intrusion Detection System and AV are failed achieve complete success in malware analysis. The limitation of signature based static technique [3] such as lack in identification of unknown malware in the system initiate the new technique that is dynamic malware analysis.

To address the limitations of static approach this paper gives the overview of dynamic analysis of malware executing in virtualized environment and evaluating the system image due to the execution of malware. There are various automated dynamic malware analysis frameworks [4][5][6][7] are available to perform the analysis either online or offline. And also powerful tools to classify the malware based on their behavioral properties. The machine learning methodologies are utilized to group the malwares furthermore to accomplish the better execution in achieving the objective by appropriately distinguishing malware and considerate examples.

II. BACKGROUND

An overview of types of malware, vulnerability and malware in virtualized environment are given in this section which has been observed in wild. Furthermore, malware classes are not mutually exclusive that is malware instance may exhibit the properties of different classes at a same time. Following are most common lists of malwares.

2.1. Types of Malware

Virus A contagious program that add itself to another piece of software [8], and then reproduces itself when it runs.

Evaluating the Impact of Android Best Practices on Energy Consumption

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ABSTRACT

Android best practices for performance are small code changes proposed by Google to reduce execution time. This paper evaluates and analyzes the impact of two of these best practices on performance and energy consumption. The practices are applied to the code of an Android application and the code efficiency is analyzed. The practices indicate a positive impact on performance and energy consumption

General Terms

Android Performance; Energy Efficiency; Android Best Practices

Keywords

Android; Best Practices; Performance; Energy Consumption

1. INTRODUCTION

The mobile device market is rapidly developing. Most of these devices run Android Operating System. Android is a development platform for mobile applications based on Linux operating system [1] derived from an open source project led by Google.

The Android application development is simplified by its SDK that provides tools and APIs needed to develop applications, favouring an easy integration with many resources available on the device. Due to limited resources available on mobile devices and the limited battery lifetime, the project of mobile apps have hard constraints specially performance and energy consumption.

Many researchers have focused on evaluation of energy consumption and performance for mobile devices, focusing on hardware components or application code. The performance of C and Java was compared in [2], while a comparison between Dalvik Virtual Machine and JVM is presented in [3]. Recently, different algorithm paradigms are compared regarding performance and energy consumption in [4] and different codes for the same purpose are compared in [5]. An evaluation of the performance of the Android best practices is presented in [6].

Google presents best practices for android development focusing on performance improvement. These practices are simple tips to reduce execution time. The focus of this paper is to evaluate and analyze the impact of two of these best practices on performance and energy consumption.

2. ANDROID BEST PRACTICES

Google proposes several best practices [7] for performance to be incorporated in application development. According to the study conducted by Google, the use of these practices provide better overall performance in application.

One of the best practices suggests that the designer must avoid the creation of unnecessary objects. Creating unnecessary objects in application code causes periodic garbage collection and thereby creating negative impact on application

performance. The other best practice indicates the use of static methods instead of virtual ones. Google claims that it brings a speed in invocation from 15% - 20%.

Another practice concerns with the declaration and usage of constants and recommends the use of static final for primitive constants and strings. When using the final keyword the class no longer requires a `<clinit>` method because the constants go into the static field initializers in the .dex file. This makes the access faster. However, the practice is valid only to primitive types and constant Strings.

Another practice suggests that the use of getters/setters methods, common in object oriented languages, should be avoided to improve Android application performance. According to Google, the time to directly access an attribute is faster than through getter/setter methods.

Concerning the manipulation of arrays, Google best practices also present the suggestion about the use of appropriate for syntax. The For-each syntax, introduced by Java 1.5, can be used to manipulate collections that implement the Iterable interface and for arrays and in these cases Google suggests the use of the For-each syntax by default. However Google suggests a hand written counted loop for performance critical ArrayList iteration. The hand written counted loops are the traditional Java for syntax and can have two variations: For with length and For without length. In For without length, the array size is obtained at each iteration. This syntax is slower than the For with length, where the array size is obtained only one time before iterations, instead at each cycle.

The best practices also indicate the use of package access instead private access in private inner classes. This practice is applied when an inner class needs to access the attributes of external class. The virtual machine considers the direct access of inner class to attributes of an external class as illegal, because they are different classes. Applying this practice, one can avoid overhead in applications that use inner class at critical points of performance.

Another best practice indicates that the use of floating point for Android is not recommended. According to Google, the use of floating point is two times slower than integer.

3. METHODOLOGY

The two Google best practices that are evaluated in this work are: the use of appropriate for syntax and avoiding getters/setters. Our experiments evaluate the impact on performance and energy consumption caused by the Android best practices. For all experiments, the emulator provided into the Android SDK is used. The emulator is configured to run on Android 4.2.2 using API 17, and simulating the ARM EABI v7a processor.

For performance evaluation, the *android.os.Debug* library is used, which generates an execution trace. The execution time is obtained using the Traceview tool which provides the values for Exclude and Include CPU Time. For energy Consumption evaluation the Android application named



Blocking Misbehaving Users by K-Means Clustering Algorithm

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ABSTRACT: Recent development in technology made our work easier when compare to earlier times. Using Data mining techniques it is possible to search large amounts of data for definite rules and patterns. If applied to network monitoring data recorded on a host or in a network, they can be used to detect intrusions, attacks and anomalies. Intrusion detection is one of the major fields of research and researchers are trying to find new techniques for detecting intrusions. This paper presents the application of data mining methods to packet and flow data captured in a network. Here we have presented a novel flow-based anomaly detection scheme based on the K-means clustering algorithm. Training data containing unlabeled flow records are separated into clusters of normal and anomalous traffic. The corresponding cluster centroids are used as patterns for computationally efficient distance-based detection of anomalies in new monitoring data.

KEYWORDS: Intrusion, Attacks, IDS, Types of IDS, K-means, K-medoid, Accuracy,

I. INTRODUCTION

The threat level is continuously changing and new attacks are emerging in an unexpected manner. Therefore security of the network becomes an important issue, as more sensitive information is exchanged online. There are some conventional mechanisms for security like, user authentication, cryptography and intrusion detection system (IDS). Firewalls simply act as a fence around a network. An IDS is capable of recognizing the attack which firewalls are not able to detect. Most of the threats in the network are due to the failure of hardware and software.

The various divisions of intrusions can be listed as follows: A denial-of-service attack (DoS attack) or distributed denial-of-service attack (DDoS attack) is an attempt to make a computer resource unavailable to its intended users. It generally makes the person or people to prevent an internet site or service from functioning efficiently or indefinitely. Web servers such as banks, credit card payment gateways and even root name servers are suffering from DOS attack.

Remote to User (R2L) attack defines the unauthorized access from a remote machine into the super user (root) account of the target system. It is a kind of attack where an attacker sends packets to a machine over a network, then exploits the machine's vulnerability to illegally gain local access as an user and exploit privileges which a local user would have on the computer e.g. xlock, guest, xnsnoop, phf, sendmail dictionary etc.

User to root attack defines the unauthorized access to local super user (root). These are the kind of attacks where an attacker access to a normal user account on the host system and is able to exploit vulnerability to gain root access to the system. Most common exploits in this class of attacks are regular buffer overflows, which are caused by regular programming mistakes and environment assumptions. E.g. using perl, xterm, etc.

Probing is a kind of attack where an attacker scans a network to gather information or find vulnerabilities. An attacker with a map of machines and services that are available on a network can use the information to look for exploits. There are different types of probes: some of them destroy computer's legitimate features; some of them use social engineering techniques. This class of attack is most common and requires very little technical expertise. This technique is commonly used in data mining e.g. saint, portsweep, mscan, nmap etc.

Advanced Baby Monitor

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Abstract The baby monitoring system gives a reliable and efficient baby monitor that can play a vital role in providing better care and protection for any infant. This paper presents the design of an Advanced Baby Monitoring System using Raspberry Pi. This system monitors parameters such as temperature and humidity surrounding the infant, movements made by the infant and also would automatically log the activity and sleep cycles of the latter and act as a means by which parents could monitor their child remotely. For this it uses a camera in order for parents to view their child and it also sends a real time video to the webpage by which it provides reminders to the caretaker or rather parent. This system architecture consists of sensors for monitoring vital parameters such as temperature and humidity sensor, PIR sensor and sound sensor which would incorporate a microphone. Measurements of these parameters can be done and conveyed to the parents with an alarm triggering the system to initiate proper actions.

Keywords Baby Monitoring, Raspbian, PuTTY, Surveillance, PIR

1. Introduction

In today's current scenario, with the arising difficulties, it has become necessary for both the parents to participate in the workforce and remain as active participants. This is done because with the increasing amount of expenses, meeting the daily requirements becomes hard. In such situations, mother's in particular find it hard to move about and leave their child alone. To reason with such situations, the Advanced Baby Monitor has been designed that will be used to ease the pressure that young adults, especially the mothers of today experience. If a system is developed which continuously gives updates a child to the respective infant parent in times of illness or during the general situations, then it will be of great help to parents as they can work in a more relaxed environment by giving a more fruitful output. Also, emergency situations can be quickly noticed and handled efficiently. Usually, when an infant cries, they are generally experiencing some form of discomfort. Hence we have developed a system which can monitor the activities of a child along with finding one of the above causes and thus give this information to the respective parent.

This proposed system can be used to provide reassurance to parents with infants. Several baby monitoring systems have been developed in the recent past. However the proposed system would not only include the already existing features but also include several additional features

in order to help parents in the process of parenting and make this process simpler and much easier. This system can automatically send out emergency signals, and have other functions. However, the care giving methods for infants are not the same. Children require different forms of help and sufficient care in order to nurture their growth and look after their general wellbeing. Since they are unable to communicate, infants express their discomfort by crying. Hence, a home-care system specially designed for infant's is today's need which would substantially lighten a parent, especially a mother's burden.

The system monitors the temperature and humidity conditions in the surrounding environment of the infant, specifically near its crib. It also informs the parents through email notifications, if the child is awake and sobbing on a continuous basis. The reason for the child to weep can be linked to various other factors that this system will provide. It detects the movement of the baby and also sends notifications to the parents through email which can be viewed through any means of a smart device as well as through a personal computer. Through the means of video streaming, the parent can obtain live feeds of their child when they want and at any point of time. The system architecture consists of several sensors which are placed near the crib such as a temperature and humidity sensor, PIR sensor and sound sensor which consist of a microphone which transmits sounds of the sobbing infant to the respective parent.

2. Architecture

A system consists of many subsystems. The architecture of the system identifies the major components of a system

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Advanced PCA for Enhanced Illumination in Face Recognition to Control Smart Door Lock System

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Abstract Face recognition is a commonly used biometric strategy in various field because of its accuracy and security. However, any feasible system will have its drawbacks. Some of the drawbacks of the face recognition system include, pose change, aging, light variation and many more. By focusing on these, illumination effect is taken into account and an advanced face recognition technique is developed. The technique that is used here is Principle Component Analysis (PCA) and Fast Fourier Transform (FFT-2). This solution is applied to a smart door lock system which allows the authorized people to access the door of the house by using face recognition technique.

Keywords PCA, Face Recognition, Illumination Effect, Smart Door Lock

1. Introduction

Biometric strategies are very important in recognizing humans because it has the capacity to uniquely identify a person based on his body parts. It can be face, fingerprint, iris, retina, voice etc. Among these techniques, face recognition method is commonly used for identification of the human because, it has the ability to recognize a person without his participation in the recognition technique. This has a prominent role to play in security purposes. Face recognition is used to criminal identification and many more because of its feasible characteristic. Studying the essence of high dimension training data in a low dimension form has become very common in the recent years. The study of reducing the dimension of the training data is known to Dimensionality Reduction.

One of the important concepts in Dimensionality reduction is the subspace method. There are 2 types of subspace methods. The first one is a Linear Subspace method. The other one is a Nonlinear Subspace method. The method that is used in the proposed system is based on Linear subspace method. Principal component analysis (PCA) is one of the basic linear subspace method used for recognition of face. It is a mathematical procedure which makes use of orthogonal conversion for changing the data to a set of linearly uncorrelated data called as principal components.

PCA is one of the common techniques which finds the application in the fields like face recognition, image compression and is commonly used for determining the

patterns in data of high dimension. Figure 1 shows the image for PCA in 2D. This image is reduced to one dimensional subspace and the orthogonal diagonal element is obtained. This transformation is shown in the Figure 2.

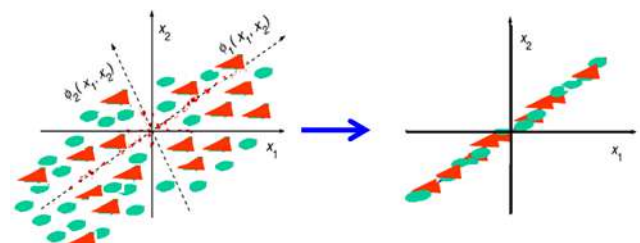


Figure 1. PCA basis (2D) **Figure 2.** PCA reduced to 1D subspace

There are several disadvantages of face recognition. Some of them include pose changes, blur or foggy image, illumination or light variation and face changes. Several methods and approaches were proposed to overcome these problems. In the proposed system, focus is put on the illumination effect of face recognition. Therefore, PCA algorithm is combined with FFT2. PCA algorithm is commonly used for face recognition. And FFT2 or 2-D fast Fourier transform is employed to process the 2-D data like images. The normalization of the image for illumination is shown in the Figure 3.

The proposed solution is applied to a home environment for controlling the door lock. When there are many people living in house, it is required that all the people should have the key to open or close the door. Or, they should wait for the person who has key to access the door. Other than the charges which cost for keeping the duplicated keys, there are also security concerns if the key is lost. There are chances of stealing the key as well which is another security issue for a house or any building. In the recent years, several door lock

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A Review On Medicare Consultancy Application Using IoT

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Abstract— It is fundamental right of human to get quality Health Care. Earlier days, people were unaware of the diseases they faced. They used the physical changes to determine the disease. But as the technology developed it also affected the Medical field. The methods of treatment got more effective. But still now a day’s people tend to ignore general diseases because of their busy schedule. People use Google as their personal Medical consultant which most of the doctors don’t suggest. To overcome this small issue, we come up with an idea which creates a platform for the interaction between the doctor and patient using IoT.

Keywords: - IoT, Arduino, Sensors, Doctor, Patient, Admin.

I. INTRODUCTION

The health is an important aspect of a person’s daily life. Health in the sense complete physical, mental and social well-being. To achieve the former, we need physically and mentally fit society. It is known fact that we are having doctors in a large number, but still people sometimes ignore all of them. People think that they are saving time by not consulting a professional doctor. But eventually they may suffer because of taking medicines on their own. This is where our system comes into play.

The application that we developed enables the user to get prescription from their home. The sensors like pulse, Temperature sends enough data to determine the general diseases like common cold, Viral fever etc. The data monitored will be sent to the database which the doctor can access and provide medicine. Features like chat and video call will help the doctor to determine the disease easily making the system reliable. The admin will have the control over the entire system.

II. SYSTEM DESIGN

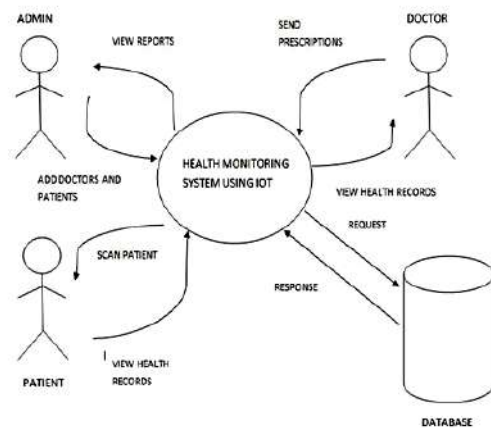


fig.1 Architecture Design

In architectural design of proposed application contains the system used by doctors and patients. On registration, a unique id is generated for the patient as well as doctor. The web application helps the doctors to maintain complete information about the patient and review patient’s health status remotely. IoT is used for checking live status of patient’s health. The data received from sensors are stored in the centralized database. Admin has the control over entire system functionalities.

Smart Mailing System for Secure Transmissions

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ABSTRACT

Email system has become the widely preferred means of information transfer in the modern business. Conventional email system is secured by a password system leading to a single layer of protection which is insufficient for guaranteed security. Modern businesses are more relying on electronic mail for communication with their clients and colleagues revealing the need for more privacy of sensitive information. The email is connected through many routers and mail servers on its way to the recipient by becoming vulnerable to both physical as well as virtual eavesdropping. The current industry standards do not place much emphasis on security as the information is transferred in plain text and the mail servers will be regularly performing the backups of the emails passing through. This leaves a digital paper trail that can be easily inspected months or years later which can be read by any cracker who gains access to an unprotected router. The proposed system helps to secure the sensitive information sent through email by providing a three layer authentication mechanism.

Keywords

One Time Password (OTP), Email, Encryption, Decryption, Authentication, Plain Text, Cipher Text

1. INTRODUCTION

Email has become a critical means in the modern competitive business. It is the backbone [1] for most of the daily activities of business organizations and will continue to grow. A larger risk to email data within the enterprise is illegitimate access to sensitive information from the mailbox. It may be through the links or from the administrator resetting knowing the higher officials password. Thus, authentication and security of mailbox data are the essential factors to be closely monitored in order to ensure that the email system data is available to only legitimate users. The increased usability of the email access via the Internet poses another security threat for business mail systems from the email clients illegally accessing the critical information. It calls for special attention towards investing in mechanisms to control illegal access to email data via the Internet. Thus, creating a secure environment that could be proactively and efficiently managed requires a comprehensive solution involving third party add-ons to address all the security issues in business.

The critical information sent through the email can be considered secure by making sure the facts like [2]: convincing the receiver that message is from intended sender, it could be read by only the intended recipient and there is no chance that

someone could have tampered the content during its transmission. The use of secure Internet protocols like secure IMAP and secure POP [3] enhance content secrecy by encrypting the content of an e-mail transparently before they are transmitted from a mail server to a user over the Internet.

The proposed system intends to develop an email server which could be used for secure transmission of information in any organization by way of three layer authentication technique. It provides a user friendly interface characterized with the three main essentialities of the ideal mailing system. ie, simple, safe and secure. The main objective is to provide a reliable environment for users to communicate the confidential informations related to their specific needs in their organizations.

The remainder of the paper is organized as follow: Section II describes the literature survey. Section III depicts the architecture of the system. Section IV contains the algorithmic & flow chart representation of the implementation. Section V discusses the result and the analysis of the system's performance. Section VI concludes the paper.

2. LITERATURE SURVEY

According to the Radicati Group's study, "Microsoft Exchange and Outlook Analysis, 2005-2009,"[4] the worldwide email market will grow from 1.5 billion mailboxes in 2011 to 2.8 billion mailboxes in 2012. Managing large, active stores of information takes time and effort in order to avoid failures – failures that will impact the users and therefore the business, undoubtedly leading to lost productivity. For secure and effective storage management, organizations must take a proactive approach and invest wisely in a comprehensive solution.

Giampaolo Bella et al. [5] proposed a system by developing the concept of a second-level security protocol that uses a first-level protocol as a primitive, showing how correctness assertions for second-level protocols can be expressed. The existing primitives of the Inductive Approach already lets it formalise such concepts as sending a confidential message, an authenticated message, or a message with guaranteed delivery.

Dan Zhou et al. [6] describe the application of their development process to the development of a Privacy Enhanced Mail (PEM) system. The purpose of this work was to demonstrate an integrated verification and synthesis process on an engineering application. Higher-order logic bridges the two systems used for verification and for synthesis; it is a useful intermediate language for relating formal tools. The

Metrics for Monitoring a Hierarchical Service-Based System

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Abstract

The dynamic nature of service infrastructure causes the Quality of Service (QoS) of Service-Based Systems (SBS) to be unpredictable during execution. This necessitates monitoring and analysis tools which collect, measure and analyse metrics that characterise performance of a SBS from diverse facades in order to recognize elements that contribute to anomalies. To have a clear insight into the working of a business process, performance metrics should be defined and measured from multiple facets of the SBS. Existing approaches which attempt to manage performance of a SBS focus on metrics of the business process, services or infrastructure resources. There is a lacuna in studies which define and assimilate metrics from all levels in order to gain a holistic view of the business process performance. In this study we define metrics at design-time to manage performance and obtain metrics from all the levels of an SBS during execution using Complex Event Process (CEP) paradigm. The empirical results demonstrate that our approach has negligible effect on the performance of the SBS.

Keywords: Metrics, Service-Based System, Monitoring, Complex Event Processing.

Introduction

A key aspect of the business process lifecycle is to continuously monitor adherence to business requirements and progress towards business objectives which help in continuous optimization of the process. In order to do so, appropriate performance indicators or metrics have to be defined and observed. A business metric is a quantifiable measure that is used to track and access the status of a specific business process. Every area of business has specific metrics that should be monitored. The term Business Activity Monitoring (BAM) was coined by Gartner [1] to describe technology that provides “*Event-driven and Real-time access to (and analysis of) critical business performance indicators*”. As stated by Buytendijk [1] BAM is not just developing the appropriate technology and processes, but also focusing on defining

appropriate metrics. When target values of performance indicators cannot be met, business analysts need to know the causes for such deviations. As performance indicators may be influenced by several factors, a clear insight into metrics at various levels help the domain experts to analyze causes for deviations.

Defining performance indicators for a Service-Based Application (SBA) is a complex task as multiple software and hardware components are involved such as business process engine, application server, server software, hardware, network bandwidth, transport, messaging protocols etc. The behavior of services in a composite business process are not only determined by the software program, but also affected by factors such as hardware resources, the number of simultaneous client requests, available bandwidth and appropriateness of the input. Defining metrics that help to precisely measure attributes of a SBA is a challenging job due to unpredictable and dynamic nature of service infrastructure. Hence we observe that defining metrics for a SBA is a complex task due to dynamism, unpredictability and dependencies on various other components. Performance metrics of SBS can be associated with several levels of abstraction. Therefore in order to tackle such complexity we can visualize an SBA as made up of three abstract layers, namely Business Process Management (BPM) layer, Service Composition and Coordination (SCC) layer and Service Infrastructure (SI) layer [2]. We organize performance metrics according to three levels of abstraction namely, the business process workflow, services involved and associated infrastructure. We define metrics for each layer in view of identifying relationship between metrics, where a metric in one layer may be the cause for a metric abnormality in other layers. The metrics at higher level can be obtained by aggregation of metrics at the lower level. For example, the end-to-end execution time of the business process workflow depends on the sum of execution time of each invoked service. The performance of a service depends on the number of simultaneous requests and properties of the hosting server such as CPU load, Processor speed, Memory availability etc. Business process metrics emphasize on statistical indicators such as average execution time of the business process,



An Efficient Two-Server Password Based Authentication System

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ABSTRACT: User Authentication in computer systems is an important basis in computer generation. The abstraction of a userid and password is one of the secure ways for authentication. It is not only the secure way, but also cost effectual and thoroughly efficient. Nowadays we can perceive the password cracking and hacking in every place. Currently we are using the single server system for this sort of password based authentication. Conventional protocols for password-based authentication imagine a single server which supplies all the data required to validate a user. When an aggressor gets the data stored on the server, he can get all the passwords which were stored in the server. To overcome this problem, a number of strategies have been proposed in which a user's password information is shared between numerous servers, and these servers combine to validate the user. In this paper, a new efficient two-server password based authentication is proposed where the client can establish different cryptographic keys with the two servers. The proposed system uses residue number system. This system is used for two server authentication scheme. Here, a single key is used for the authentication or it can also be referred as symmetric key. This key is split into a tuple which contains the representation of the key in residue number system. Single key of the tuple is used in either server for authentication. Further a redundant bit is used at the user side so that the key can be recovered by using this redundant bit which can be stored in one of the dedicated server. These two servers' runs parallel and collaborate with each other to validate the user.

KEYWORDS: Residue Number System (RNS) Encryption Method, Password Authentication, Two server concept.

I. INTRODUCTION

Password based user authentication systems are simple to utilize and popularly priced. Authentication means how effectively we use our password in securely. A user just requires to remember a tiny password and can be authenticated any place, at any time. Passwords are generally used by human during log in operation that control access to saved mobile phones, computer Systems and so on. A user may need passwords for numerous reasons – registering in to computer accounts, recovering mail from servers, accessing programs, and databases.

Normal password based authentication systems communicated a cryptographic mixture of the password over a public channel which builds the mixture value available to an aggressor. After that, the aggressors can effort offline, quickly testing realizable password opposed to the correct password's mixture value. Most of the existing password based authentication system imagines the single-server model where a single server exists in a system. The considerable disadvantage of the single server model is that, if the user gets to know about encrypted password, the possibility of decrypting password may be higher. To overcome this issue, a new kind of authentication system called the two server authentication system was proposed. In case of two server authentication system password is encrypted into two pieces using RNS method and stored in separate server. Two servers cannot be easily compromised by an intruder, because hacker get one password also is not be able to access the system. In such strategies, the ability of verifying a password is split between two or more servers, and these servers need to collaborate to recover the password. The proposed system makes use of the two server concept along with Residue Number System Encryption Algorithm.

Security Camera ULO

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Abstract— Safety and security have become a primary concern of many associations today. One way to enhance the security is by having a video surveillance system. It provides immediate supervising of properties, people, and environment. This paper deals with the design of a Real-Time Surveillance System Based on Raspberry Pi for intruder detection.

The proposed system uses a picamera, motion detectors and servo motor to detect intruders. The system uses a Raspberry PI to control motion detectors and a camera for surveillance.

Keywords—Embedded System, Motion Detection, Raspberry PI, Surveillance System, tracking

I. INTRODUCTION

The need to develop a cost-effective surveillance system influenced the development of this system. This paper proposes an approach to design and implement a security system based on Raspberry Pi. Users can use the telegram app to communicate with the system. The proposed system should be able to detect motion (intruder), activate a camera to click an image after motion is sensed and then sends a message to the owner through the telegram app along with the captured image.

The proposed surveillance system can be used for monitoring a place in remote areas. The users can communicate with the system from anywhere in the world. This system attempts to use the motion detectors, camera, Raspberry Pi together with a suitable program script to accomplish a real time surveillance system.

The proposed system can be used widely to monitor facilities by owners. The owner shall be able to monitor their property from wherever they are in the world. This thus will enable small home owners to secure their facility at a cheaper cost.

II. DESIGN

A. Architectural Design

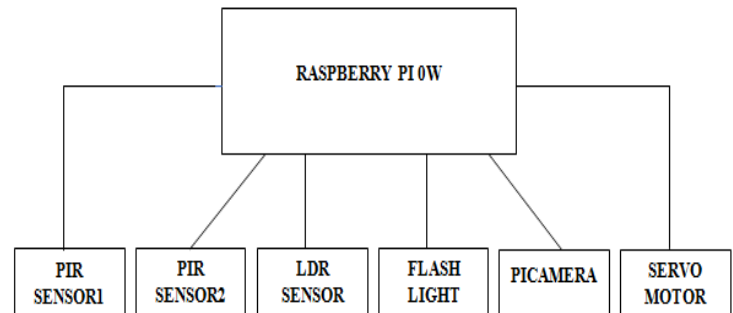


Figure 1. Architectural Design

ULO is a real time security camera using Raspberry Pi 0W. There are 2 PIR sensors to detect motion, servo motor is used for camera rotation and a picamera to click the image. The LDR sensor is used to detect day or night. The flash light is turned on if night. These components are connected using jumper cables [1].



Identification of Multiple Leaves and Retrieval of its Medicinal Value

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ABSTRACT: Earth has a large part of flora diversity. However globalization has adversely affected our environment and much of the plants are on the verge of extinction. The chemical compounds present in plants works in a similar manner to that of man-made drugs. As this field is growing, it becomes utmost important to keep the database of plants updated so that identification of plants can be done smoothly. This paper proposes an efficient method to detect multiple leaves called the Component Labeling Method. Shape features which are invariant to translation, rotation and scaling are considered. In addition to the existing basic shape features new features which are also invariant have been considered. The features in the feature database are grouped by using an efficient clustering method called CURE and finally the leaves are identified. Accuracy of the leaves identified using basic features and the new features are also shown.

KEYWORDS: Component Labeling Method, translation, rotation and scaling, CURE Clustering Method

I. INTRODUCTION

Plants play a vital role in our environment. They purify the air and also give food and shelter to animal species. Apart from this they are also used for economical purposes[11].

Earth has a large part of flora diversity. Much of these plants have medicinal value. These plants have been identified and used throughout history. The chemical compounds in the plants work similarly to the chemical compounds present in drugs created by man[11]. Hence herbal medicine does not differ much from conventional drugs. The herbal medicines are very safe as they do not have any side effects. They are also available at a very low cost. Hence most people prefer herbal medicines. As this field is growing there is a high need to identify plants that can be used as medicine. Day to day we here names of new diseases. Creating a new drug is definitely time consuming. Hence if an alternative to these drugs can be found out which doesn't have any side effect is definitely beneficial. With the urbanization a lot of plants are being destroyed and hence the plant species are on the verge of extinction. Thus building a leaf database for quick retrieval of information has become important.

A plant can be identified by its leaves, flowers and fruits. But the leaves play a prominent role in identification because they are almost available throughout the year. A leaf can be identified by its shape features[2]. Different leaves have different shape features. Using these features plant leaf can be identified. Digital image processing is a technique which uses high level algorithms to perform image processing. Thus, the image of the leaf can be processed by image processing techniques and the leaf can be identified.

In recent years numbers of pattern recognition techniques and computer methodologies have been applied for automatically categorizing plant species [9]. Several methods have been proposed for identifying single leaf [8-11]. The proposed method can identify both single and multiple leaves when given as a query using shape features. Color and Texture features of the leaves are not considered because as the plant ages its color and texture might change. Thus using these features would not be realistic [11].

SECURE CLOUD DATA SHARING BY AGGREGATION OF KEYS INTO A SINGLE DECRYPTION KEY

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Abstract

Cloud computing offers a number of advantages to all type of users including end users and business enterprises. It is a technology which allows the users to get access of applications and resources from anywhere which are not residing in our computer, but residing in some other locations. The problems in cloud computing are regarding the security of stored data as well as the shared data. To protect one's data over cloud, the basic techniques used include encryption, authentication and authorization which are becoming less efficient these days. Security and privacy issues get even worse when a set of particular data needs to be shared with specific users. Traditionally there are two main methods to share a set of selected data with another particular user. Either encrypt all data with single key and give the corresponding single decryption key to the other party, or encrypt each data with distinct keys and send corresponding keys to the receiver. In the first method, all the data will be leaked to the receiver. Obviously, the second method is inefficient since transferring and storing all the keys require large space. In this project, a set of data, called the ciphertext class is being shared with a particular user or group of users, as per the data owner's requirement. A single, compact, but powerful key is used as decryption key which is generated using a combination of different cryptographic algorithms as well as the ciphertext class identifier. The user who is receiving the ciphertext class will be able to decrypt it only if he is the intended user and he possesses the powerful decryption key. Hadoop framework is used for providing the distributed cloud environment. The implemented project works well for files of different types and sizes which are shared to individual users as well as groups of users. The results show that there is not much time difference for different types of files for encryption and uploading as well as for decryption and downloading.

Keywords: Ciphertext Class, Encrypt, Hadoop

1. INTRODUCTION

Cloud computing is everywhere. It assures to reduce operational and capital costs and let IT organizations to focus on strategic projects instead of keeping the datacenter running. In short, cloud computing is a technology which allows us to get access of applications and resources which are not residing in our computer, but residing in some other locations. Cloud computing provides a number of advantages both to end users as well as businesses of all sizes. Cost efficiency is the most important advantage of cloud computing, which can be achieved by avoiding investment in stand-alone software or services. Another advantage is the convenience and continuous availability. Public clouds provide services that are available wherever the user is located. The backup and recovery of data is simplified in cloud because those now reside not on a physical device, but on the cloud. Scalability is an important feature in cloud. Cloud services are deployed only when it is needed on a pay-as-you-go basis. Increased storage capacity is another advantage of cloud computing.

Cloud systems can be used for data sharing which will give great benefits for the user. The main benefit for organizations is higher productivity. Multiple users from different organizations can contribute to the data in cloud thereby reducing the time and cost. With social networking

services such as Facebook, the benefits of sharing data are numerous. Google Docs provides data sharing capabilities as groups or teams. Cloud data sharing is beneficial in so many fields such as healthcare. However cloud is vulnerable to different kinds of privacy and security attacks.

Due to the emergence of social network sites such as facebook and e-commerce providing organizations, the amount of data generated daily is very large. One organization can collaborate the data provided by other organizations. So providing secure access to the shared data became a big issue. If the Cloud Service Providers (CSP) are untrusted, the risk increases. CSPs can behave unfaithfully for increasing their profit margin or something like that. CSPs may discard the rarely accessed data not in a timely fashion. Or, they may try to hide the incidents of data loss to keep up their reputation. Several cryptographic techniques have been introduced for solving this issue. But many of them were not that much useful in the case of efficiency and cost optimization. Besides, when a user wants to share a set of his private data with another person, the existing methods gives a number of issues. For example, he/she can encrypt all the data in the set using the same key and share the only one corresponding decryption key with the other party. This method will lead to the issue that data which are not meant to see by the receiving party also can be decrypted. In an alternate method, the user can encrypt each data in the set

Intrusion Detection and Prevention using Blocking and Back Tracking for IP Spoofing

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Abstract— Forging, or “spoofing,” the IP addresses of sender, intermediate or receiver nodes provides malicious parties with anonymity and novel attack vectors. Spoofing-based attacks complicate network operator’s defense techniques, tracing spoofing remains a difficult and largely manual process. Hence we come up with a technique called Back Tracking using hashing approach. We use an efficient encryption and decryption technique to keep the message safe and we also append the IP addresses of sender, intermediate nodes through whom the message is either sent or forwarded, the receiver node will get the IP addresses of all such nodes along with the decrypted message.

Keywords—IP addresses, Back Tracking, Encryption, Decryption.

I. INTRODUCTION

Internet Protocol spoofing is a method of attacking a network in order to gain unauthorized access [1]. The attack is based on the fact that Internet communication between distant computers is routinely handled by routers which find the best route by examining the destination address, but generally ignore the origination address. Only the destination machine responds back to the source using origination address. In spoofing attack, the intruder sends message to the node predicting him as a trusted system. To be successful, the intruder must determine the IP address of a trusted system. The recent attacks using IP spoofing are man in the middle, routing redirect, source routing, blind spoofing and flooding. IP spoofing is commonly associated with malicious network activities, such as [7]. Distributed Denial of Service (DDoS) attacks, which block legitimate access by either exhausting victim server’s resources or saturating stub networks access links to the Internet. The IP Source Guard feature works very well for interfaces with a single IP address, but one interface can be assigned multiple IP addresses, and that may cause problems. The best method of preventing the IP spoofing problem is to install a filtering router that restricts the input to your external interface (known as an input filter) by not allowing a packet through if it has a source address from your internal network.

IP Spoofing may be a drawback while not a simple answer, since it's inherent to the planning of the TCP/IP suite. Understanding however and why spoofing attacks are used, combined with a number of straightforward interference ways, will facilitate defend your network from these malicious cloaking and cracking techniques. The speedy enhancements of intrusions in web and alternative networks are the most factors accountable for the propagation of various threats and vulnerabilities within the computing surroundings. Thus we have a tendency to try and implement procedures known as block and backtracking to observe the entrant within the network similarly as stop him from intrusive the network by tracing back every hop and decisive at that node the wrongdoer spoofs the network.

Trace back technology plays a very important role in discovering the supply of spoofed packets. Hop-by-hop trace back and work of suspicious packets in routers are the 2 main ways for tracing the spoofed IP packets back to their supply.

When a node detects that it's a victim of flood attack, it will inform the net Service supplier (ISP). Overflowing attacks the ISP will confirm the router that's causing this stream to the victim, and so it will confirm consequent router, and so on. It reaches either to the supply of the flood attack or the top of its body domain; for this case it will raise the ISP for consequent domain to try and do an equivalent issue. This method is beneficial providing the flood is in progress.

IP spoofing may be a tough drawback to tackle; as a result of its associated with the IP packet structure. IP packets are exploited in many ways in which. As a result of attackers will hide their identity with IP spoofing, they will build many network attacks. Though there's no simple answer for the IP spoofing drawback, you will apply some straightforward proactive and reactive ways at the nodes, and use the routers within the network to assist observe a spoofed packet and trace it back to its originating supply.

IP Networks are vulnerable to source address spoofing. For example, a compromised Internet host can spoof IP packets by using a raw socket to fill arbitrary source IP addresses into

Behavioral Malware Detection for Bus Ticket Booking

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Abstract Malware is a program or a file which can gain entry to private system without the user's permission. Malicious users can attack the web data and perform malignant activities. It can also access the confidential data present in the system. This paper focuses on the case study of ticket booking system. The main challenge here is to find the malicious users and blacklist them. Malicious users can be detected based on the some system call behaviors such as name and email id. The behaviors are predefined, if current user activity matches with predefined activity then the particular user is considered as malicious and can be blacklisted. This will help the end user to get the available bus seats on time.

Keywords Malware, System Call, Seat Chart, Malignant Activity, Behaviors

1. Introduction

Malwares are programs or it can be any documents or files which can gain access to user's private system without their attention. Web data can be attacked by malicious users and perform Malignant Activity.

This paper focuses on the case study of bus ticket booking system. Usually ticket booking website contains seat chart which has available seats and unavailable seats. Sometimes two users may select same seat and pay for the same without knowing each other's actions. So in ticket booking website, there will be three states. When the user selects any seats, that particular seat will be blocked for some period of time which is known as blocked state. This blocked state changes to booked, if user does the payment within that particular period of time. That seat will be released if the payment is not done within that period of time, the state here is known as released state.

Sometimes, the seats will be blocked simply and not booked. This blocking may be done by some malicious private bus agencies. If they do so, users may think that all seats are full in this particular bus agency and they will search in other private bus agency services. These malicious bus agencies will select the seats randomly, so that seat will be blocked for some duration of time. But the payment for the seat will not be done. In this blocked period, that particular seat will be unavailable.

If any other user searches for that particular seat, it will be blocked. This may be mistakenly done by genuine users also. But the system may consider that users as malicious users. The problem is to find out malicious users and

non - malicious users. Malicious users are detected based on the behaviors which are predefined.

IP address, name and email id etc are the behaviors which the system can consider. These behaviors can be distinguished into two sections. The sections are network based and system call based. System call based behaviors such as email id and name are considered. These behaviors have to be defined previously. If the predefined behaviors and user's activities match with one another, then that user can be blocked. This will help the bus users to get available seats on time.

The rest of the paper is coordinated as follows. Section II briefly explains an overview of the existing system and their related work. Section III provides detailed description of proposed methodology. Section IV represents the results. Finally, section V presents conclusion and the future scope.

2. Related Work

Different detection approaches have been introduced to detect the malwares. In [1] malware detection for android devices is done based on the behaviors. There are two approaches in this. First is based on network method. All the remote place's URLs are acquired by network analysis for which application is in touch. Later pattern matching will be done with respect to malicious domains which are familiar. Second is based on system calls. Frequencies are measured for system calls of all the applications. Then it is matched with respect to familiar malicious domains. Data mining methods are used for detection of malwares in [2]. API series are considered as malicious behaviors in this method. User's secret data will be captured by malignant applications. Kernel based behaviors are used for the analysis of android malwares in [3]. This method has log collector and log analyzer. System calls are recorded by log collector and filtering of events will be done using target applications. Log

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Automated Store System

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Abstract—This paper focuses on avoiding customer discrimination and providing a one-time investment to shop owners by automating the entire shopping process using a moving robotic arm and an Android Application. The customer can enter his/her order using the app and the order is serviced by the robotic arm. The robotic arm automates the store and allows hassle free shopping to the customer without any human errors.

Keywords—Arduino Mega, RFID tags, Android Application, Bluetooth module, Motors.

I. INTRODUCTION

Customers experience different kinds of discrimination by shopkeepers. For example: More priority to known or rich customers, lower quality of items, asked to pay more money than the actual price, giving certain products to special customers only. Customers also do not get the real time information about the products. Shop owner has to pay salary monthly to his workers. This project allows the shop owner to make a one-time investment on it and save significant amount of money which he would otherwise had to pay to his workers and also to stop the discrimination made by the shopkeepers and workers by automating the shop.

This paper describes a prototype of the system through which the entire shopping experience can be automated using a moving robotic arm and an Android Application.

II. BACKGROUND

In 1986, Mike's wife came home tired because of queue in the grocery store, Mike developed the Smart Mart, an automated convenience store. After seven years of research

and development, the concept of automated store was ready to become a reality. In 2003, the first concept store was opened at a location in East Memphis.

Amazon's first automated grocery store promises no lines, no checkouts, no registers and it has been a revolution for the grocery and retail industry. The store is called amazon go and it has been opened to the customers in Seattle.

A research on supermarket architecture reveals that using RFID technology with inventory management is efficient^[1].

III. PROPOSED SYSTEM

The scope of this system is to provide human error free shopping experience. The customer has to wait for the robotic arm to do the job and get the items to the customer.

Traditionally, the customer had to go the store, find the product in the store and wait in the queue for the billing of the product and then leave the store. Customer with physical disabilities and aged customer would face difficulty in waiting in the queue for long durations.

The proposed system uses the arm as the medium for lifting the products from the basket to the load cell using the gear of the robotic arm. The gears move in the specified manner set by the admin of the product.

The prototype model consists of hardware and software system. The hardware system involves the robotic arm driven by Arduino Mega, Bluetooth module and RFID tags. The software system is developed for android platforms. The Application allows customers to shop from the variety of products available in the store. The shop keeper maintains the database and handles the inventory of the shop. The overview of the system is shown in Figure 1.



Image Encryption Using Efficient Elliptic Curve Cryptography

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ABSTRACT: Cryptography is a method of storing and transmitting data in a secured form so that only intended user can access it. Cryptography can be classified into Asymmetric key Cryptosystems and Symmetric key Cryptosystems. In most paper Elliptic curve uses Asynchronous cipher. In this paper image encryption based on synchronous cipher using Elliptic curve as a part is discussed. The points on GF(P) over an Elliptic curve is taken with an equation $y^2=(x^3+ax+b)\text{mod } P$ by choosing appropriate parameters, a and b, where P is a Prime Number. The key for the encryption algorithm is generated using the index point. This index point is generated using LFSR (Linear Feedback Shift Register) with a polynomial of degree n with an initial value. Take the output from LFSR as index and find the key (K_i) from the points on EC (Elliptic Curve) either y or both x and y coordinates points alternately and an image is encrypted using an additive encryption algorithm using the key (K_i).The Paper is tested for different types of evaluation.

KEYWORDS: Cryptography, Linear Feedback Shift Register (LFSR), Standard Deviation, Entropy, Quality of Encryption.

I. INTRODUCTION

As the internet and other communication become more superior, security is important in present day communication. Cryptography is a method of storing and transmitting data in a secured form so that only intended user can read and process it. In other words, Cryptography is the science of keeping information secure. It involves encryption and decryption of messages. Encryption is the process of converting a plain text into cipher text and Decryption is the process of getting back the original message from the encrypted text. Cryptography is used to protect e-mail messages, credit card information etc. Cryptography provides confidentiality Authentication, Integrity and Non-repudiation.

Cryptosystems can be classified into two categories: Symmetric Key Cryptosystem and Asymmetric Key Cryptosystem. In Symmetric Key Cryptosystems, the same key is used for both Encryption as well as decryption. i.e. if M is the message and K is the key then $D_K(E_K(M)) = M$. Asymmetric or Public key or shared key cryptosystems use two different keys. One is used for encryption while the other key is used for decryption. The two keys can be used interchangeably. One of the keys is made public (shared) and the other key is kept as secret. Symmetric cryptosystem is classified into block cipher and stream cipher. Stream cipher that encrypts plaintext one bit at a time. Block Cipher that encrypts plaintext at once as a group rather than one bit at a time. Stream Cipher executes faster compared to block cipher. Most of the encryption uses Stream Cipher. The Literature review using Stream Cipher is given below.

II. LITERATURE SURVEY

In paper [1], author focused on the properties of Finite Fields and elliptic curves in the design of a stream cipher system. Additive and Affine encryption key sequences obtained from random elliptic curve points using six schemes are designed and investigated. The encrypted images obtained for the input image and the corresponding histograms are discussed. The histograms are almost flat offering good security for images. The Entropy and the correlation coefficient of the input and encrypted images are computed and analysed. In [2] image encryption scheme which utilizes a chaos-based feedback cryptographic scheme uses the logistic map and an external secret key of 256-bit. The robustness of the proposed ECBFSC is further reinforced by a feedback mechanism, which leads the cipher to a cyclic behaviour so that the encryption of each plain pixel depends on the key, the value of the previous cipher pixel and the output of the logistic map. In [3], EC based key generation for stream cipher is proposed. The key streams are generated based on the combination of LFSR and cyclic EC over a finite prime field. For the proposed cipher, the secret key stream is altered

SURVEY ON ALGORITHMS USED FOR TEXT DOCUMENT CLUSTERING

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Abstract— Document clustering is the process of segmenting a particular collection of texts into subgroups including content so that similar documents are in one group. It is also called text mining. The purpose of document clustering is served mainly in search engines and information retrieval from the database. Nowadays all paper documents are in electronic form, because of quick access and smaller storage. So, it is a major issue to retrieve relevant documents from the larger database. The goal is to transform text composed of everyday language in a structured, database format. In this way, heterogeneous documents are summarized and presented in a uniform manner. The challenging problems of document clustering are big volume, high dimensionality and complex semantics.

Keywords— Text mining, Document clustering, K-means, Fuzzy C-means, Semantic Analysis

I. INTRODUCTION

The goal of this survey is to provide a comprehensive review of different clustering techniques in text mining. Clustering is a powerful data mining technique for discovery of topic from text documents. It is the process of organizing data objects into a set of disjoint classes called clusters. Objects that are in the same cluster are similar and dissimilar to the objects belonging to other clusters. Document clustering is the task of automatically organizing text documents into meaningful clusters or group, In other words, the documents in one cluster share the same topic, and the documents in different clusters represent different topics [1].

Document Clustering is one of the most important text mining methods that help users to effectively navigate, summarize and organize text documents. By categorizing large amount of documents into a number of meaningful clusters, document clustering can be used to return results in response to users query.

The text clustering has a wide range of applications. The main applications of text clustering include: the automatic summary based on the text clustering method [3], the automatic organization of the text sets [4], and search result clustering [5]. As a typical non-supervised learning problem, text clustering methods can be divided into: partition-based methods, hierarchical methods, density-based methods, grid-based methods, model-based methods, and other types [6]. Because the K-means algorithm is simple, so it is widely used in text clustering. Due to the randomness of the initial center selection in the K means algorithm, the results of its operation are unstable and easy to fall into the local minimum point. And then Dunn proposed the fuzzy C-means (FCM) algorithm.

Clustering algorithms are mainly divided into two categories: Hierarchical algorithms and Partition algorithms. A hierarchical clustering algorithm divides the given data set into smaller subsets in

hierarchical fashion. A partition clustering algorithm partition the data set into desired number of sets in a single step.

Hierarchical algorithms create decomposition of the database D. It is categorized into agglomerative and divisive clustering. An agglomerative clustering start with a one-point (singleton) cluster and recursively merges two or more most appropriate clusters. A divisive clustering starts with one cluster of all data points and recursively splits into the most appropriate clusters. The process continues until a stopping criterion is achieved. There are two main issues in clustering techniques. At first, finding the optimal number of clusters in a given dataset and secondly, given two sets of clusters, computing a relative measure of goodness between them.

The most popular partitioning algorithm is the *K-means* algorithm. In K-means, a global *objective function is defined* and iteratively move objects between partitions to optimize this function. The objective function is usually a sum of distances (or sum of squared distances) between objects and their cluster's centers and the objective is to minimize it.

In conventional clustering objects that are similar are allocated to the same cluster while objects differ are put in different clusters. These clusters are hard clusters. In soft clustering (Fuzzy division) an object may be in more than two or more clusters.

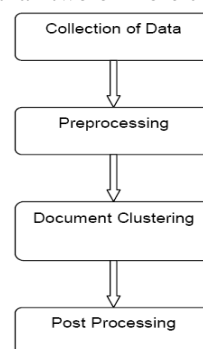


Fig. 1. The Stages of Clustering

Connectify- A Social Networking Website

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Abstract Social media is more important today than ever before. Staying connected and informed has become the need of the hour for every individual. Social networking sites have become very popular avenues for people to communicate with family, friends and colleagues from around the corner or across the globe. Traditional social networks have all of the user's contacts muddled into a single list offering everyone the same privileges. Connectify- The Social Network is a social networking website that intends to connect people in a more organized manner by categorizing the user's connections according to his work, social and familial relations. This paper gives a brief overview of the project which focuses on the social network and its features which are extensively used today by a wide range of people.

Keywords Social Networks, Activities, Groups, Website, Security

1. Introduction

Social Networks are used by hundreds of millions of people around the world and have become prevalent forms of communication and interaction on the internet [1]. A Social Network is defined as an internet-based service that allows individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system [2]. Social Networking sites connect people worldwide through a range of features including fairly static profile information, such as job history and likes/dislikes, and more dynamic content like what people are doing and how people are feeling at various points throughout the day. While this sort of input provides the ultimate flexibility, the requirement for manual input places a barrier between a person's dynamic status and its representation on a users profile page.

What makes social network sites unique is not that they allow individuals to meet strangers, but rather that they enable users to articulate and make visible their social networks. Beyond profile, social networking sites vary greatly in their features and user base. Some have photo sharing or video-sharing capabilities; others have built-in blogging and instant messaging technology [8].

Connectify- The Social Network aims at providing an unambiguous platform where one can separate his/her contacts into any of the three groups- Work, Friends or Family and give individual attention to each. This provides

greater convenience and a better networking experience to the user. The attempt of this website is to standardize multiple services to avoid the need of duplicate entries and allow efficient use of social network for convenience of users [3]. It ensures filtered group structure throughout the website for ease of the user communication. Connectify categorizes the user's connections at their first point of contact and maintains it throughout. Whenever the user receives a request for connection, he/she can add the contact to any of the three groups [6]. A confirmation message is sent to the request sender about the group they are added to. The user can share posts to each group separately according to the context of the post. It also facilitates viewing the updates of each group on different pages. A business related post such as a meeting reminder will be posted and viewed in the Work section of the account. Switching between each group becomes easy. The project offers the users crucial features like two-step verification, location tracking during login and word filter according the user's discretion. At the same time the user interface is intuitive and avoids extraneous features not related to networking.

In a world where time is money, an organized social network can go a long way in providing a hassle free experience to the masses. This project provides a platform to network without the unnecessary clutter that comes with traditional social media. It provides effective environment for personal as well as business oriented needs.

2. Related Work

During the last few years social networking has evolved into a fundamental daily activity for many individuals and a new frontier for business marketing. Besides traditional social networking, the recent trend is professional and domain-specific networking services focused on interactions

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An Implementation of Image Processing Based Face Recognition Attendance System

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Abstract—Face of a person can be used as an ID to identify an individual. In this paper the face is used as an identity for updating the attendance. In this method we used MATLAB tools for Face detection and recognition. The Student database is designed using MySQL and PHP. Traditionally, pen-paper method is used to mark the attendance. In this paper, confront location and face acknowledgment strategy is utilized. Face identification is utilized to find the situation of face district in the caught picture and face acknowledgment is utilized for perceive the understudies' face for denoting the participation. The database of the considerable number of understudies in the class is put away and when the substance of the individual understudy matches with one of the countenances put away in the database then the participation is recorded.

Keywords—Face detection, Recognition, HOG feature

I. INTRODUCTION

Keeping track of the attendance is a very important thing in any institution or company. In most of these institutions, student attendance are manually recorded by using the attendance sheet issued by the institution [1]. This traditional way (pen –paper method) of taking the attendance is tedious. The students may give proxy to their friends. To overcome these problems an automated attendance system is required. Thus we propose the face recognition attendance system. This system uses the face of a person as an identity to give the attendance.

Face recognition is chosen owing to its non-intrusive nature and familiarity as people primarily recognize other people based on their facial features. This (facial) biometric system will consist of an enrolment process in which the unique features of a persons' face will be stored in a database and then the processes of identification and verification. In these, the detected face in an image (obtained from the camera) will be compared with the previously stored faces captured at the time of enrolment.

The overall objective is to develop a Face recognition attendance system is to perform the following tasks:

- To recognize faces continuous.
- To perceive the recognized faces by the utilization of a reasonable calculation.
- To refresh the class participation enroll after a fruitful match.
- To plan an engineering that constitutes the different parts working amicably.

In this paper, we compare the accuracy and time consumption of the face recognition system.

II. RELATED WORK

The most punctual work on confront acknowledgment can be followed back to the 1950s in brain science [Bruner and Tagiuri 1954].Some of the soonest ponders incorporate work on outward appearance of feelings by Darwin [1972] and on facial profile-based biometrics by Galton [1888]). In any case, inquire about on programmed machine acknowledgment of countenances truly began in the 1970s [Kelly] and after the original work of Kanade [1973]. [3]

A significant number of the speculations and hypotheses set forward by analysts in these controls have been founded on rather little arrangements of pictures. By the by, a considerable lot of the discoveries have essential outcomes for engineers who plan calculations and frameworks for machine acknowledgment of human faces.[3]

In the course of recent years, inquire about has concentrated on the most proficient method to make confront acknowledgment frameworks completely

A COMPARATIVE ASSESSMENT ON TECHNIQUES OF AUTOMATED DYNAMIC MALWARE ANALYSIS

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Abstract— Malware is a combination of the word malicious and software. It has become a major intimidation in the internet today, so Antivirus vendors are confronted with a creation of malware samples. The prologue of new malware samples everyday is not uncommon. The malware designed by the attackers have the ability to change as they propagate. Moreover, the diversity and volume of their variants severely affects the traditional defenses that use signature based techniques. In this paper a literature work on the automated dynamic malware analysis is carried which is useful in the detection of malware. The tools and techniques required for the analysis process are mentioned by clearly depicting the characteristics, advantages and disadvantages.

Keywords— Malware, Dynamic malware analysis, Machine learning techniques, Benign software

I. INTRODUCTION

Malware essentially referred to as software that “deliberately fulfills the harmful intent of an attacker” [1]. However, these are intended to get access to computer system and steal network resources. Malware can be classified into different categories base on their malicious behavior. Viz. “Virus”, “Spyware”, “Worm” etc. The first instance of malicious software found is PC Virus Brain in 1986[2]. The motivation to such malware is to highlight the vulnerability in the system. Since then, the motivational change to financial benefits.

Malware is one of the most terrible and major security threats facing the Internet today. According to a survey, [28] conducted by FireEye in June 2013, 47% of the organizations experienced malware security incidents/network breaches in the past one year. As the malwares are continuously growing in volume (growing threat landscape), variety (innovative malicious methods) and velocity (fluidity of threats) [29], these are evolving, becoming more sophisticated and using multiple new ways to target computers and mobile devices. McAfee [30] catalogs over 100,000 new malware samples every day means about 69 new threats every minute or about one threat per second. With the increase in readily available and sophisticated tools, use of the new generation cyber threats/attacks is becoming more targeted, persistent and unknown. The advanced malwares are targeted, unknown, stealthy, personalized and zero day as compared to the traditional malwares which were broad, known, open and one time. Once inside, they hide, replicate and disable host protections. After getting installed, they call their command and control servers for further instructions, which could be to steal data, infect other machines, and allow reconnaissance. Antivirus (AV) software was introduced with an intention to prevent, detect and

remove malicious software. This effort mainly focused on content-based signatures to automatically classify and analyze malware samples. Unfortunately, these techniques are essentially susceptible to inaccuracies due to polymorphic and metamorphic techniques. As a result, the Intrusion Detection System and AV are failed achieve complete success in malware analysis. The limitation of signature based static technique [3] such as lack in identification of unknown malware in the system initiate the new technique that is dynamic malware analysis.

To address the limitations of static approach this paper gives the overview of dynamic analysis of malware executing in virtualized environment and evaluating the system image due to the execution of malware. There are various automated dynamic malware analysis frameworks [4][5][6][7] are available to perform the analysis either online or offline. And also powerful tools to classify the malware based on their behavioral properties. The machine learning methodologies are utilized to group the malwares furthermore to accomplish the better execution in achieving the objective by appropriately distinguishing malware and considerate examples.

II. BACKGROUND

An overview of types of malware, vulnerability and malware in virtualized environment are given in this section which has been observed in wild. Furthermore, malware classes are not mutually exclusive that is malware instance may exhibit the properties of different classes at a same time. Following are most common lists of malwares.

2.1. Types of Malware

Virus A contagious program that add itself to another piece of software [8], and then reproduces itself when it runs.

Converting and Deploying an Unstructured Data using Pattern Matching

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Abstract Text mining is also known as knowledge discovery from textual databases; its job is to derive a high level knowledge from the text. The process of obtaining useful information from the records is also known as text mining. The system uses many data mining approaches to extract the patterns from the text documents. The challenge is using those updated patterns and implementing an algorithm for pattern discovery is still an open research issue. The paper focuses on using the pattern matching technique for regular expression to find the relevant data from the text/word file. The text file containing large number free-text is used to fetch all the discovered words or characters from the documents. The system is helpful for the users to search the relevant document, and converts all the unstructured data into structured form.

Keywords Text Mining, Document Clustering, Pattern Discovery, Pattern Matching, Pre-processing

1. Introduction

Text mining is a discovery of knowledge from textual databases; its task is to extract a effective knowledge from the text. The process of deriving useful information from the records is also known as text mining. There are several methods of data mining techniques used to select the patterns from the text files. The dataset used in the data source could be in the form of an unstructured or semi structured text documents.

The text mining process contains: The basic operations such as extrication and identification of the text pattern. Document consists of a discontinuous or a discrete textual data. i.e. by collecting the real universe documents like business report, email, and news story etc. whereas the categorization of documents based on texts is called document clustering. The document can be picked out from any of unstructured files or documents. The format of unstructured documents is of free style text and it does not carry any precised format. The structure of the text is inadequate compared to the structured format. These types of unstructured document are mostly found in research areas and the online documents type like the web pages.

Pattern discovery is a text mining technique; its main function is to select the document text of different pattern. The different pattern styles may consists of a word or a group of words. The main objective of the paper is to identify the patterns and placing it over an unstructured data. Also to use

those deployed data to get in a proper document.

Text mining is a process, in which structured information is collected from an unstructured text, and it is also used to extract and discover high quality knowledge automatically hidden in texts. Unstructured data refers to information does not hold any built-input text files. This data is usually in a paragraph or passage. The data might contain file with several information. It is an overall description of selecting an input from a file. The data in a file does not contain any database. Unstructured data can be word-based or non-word based texts.

2. Literature Review

The first paper focuses on the challenges faced in different kinds of text mining techniques are used in the extraction of specific information from the required documents. The commonly used text mining techniques in the data mining is the approach of term based. This paper concentrates on the new ideas which use different concept to discover the pattern efficiently to get relevant data in [1]. An automatic text development approach was implemented is based on the categorization concept. The categorization approach made use for the document text extraction was implemented using the real world information collected from various databases across the world. The outputs are demonstrated for showing the performance and the quality of the categorization approach in [2]. A data is extracted from the information document which is called as Information Extraction (IE) and is based on the rule model. The algorithm used is based on the unsupervised strategy, also made use of the inductive learning approach for the text mining. To identify the natural languages the morphological features of the documents are

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AIML and NLP Based College Enquiry Chatbot

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Abstract—a chatbot’s aim is to make conversation between humans and machines and they are designed to depict how a human would react in a conversation. This paper shows the implementation of a chatbot which provides information related to the college such as directions to navigate on campus, history of the college, information on the management and administrative staff, as well as details such as the lecturers’ schedules, timetables, event notices, exam dates, frequently asked questions, etc. The chatbot is based on AIML (Artificial Intelligent Markup Language) and NLP (Natural language Processing) for parsing the sentences and training the bot to understand the user’s messages.

Keywords—AIML, NLP, Python, BeautifulSoup, chatbot, telegram

I. INTRODUCTION

The chatbot mimics the conversation flow by using natural language processing and AIML. They are usually used in dialog systems for several purposes which include customer service, acquiring information, virtual assistants. Chatbots are given the capability of small talk to engage the user in casual conversations in order to make them give the feel of being humane. The bot has been embedded knowledge to identify and understand the sentences and find the various conversational patterns. The principle is to parse the grammar in the inputs given by the user and match the patterns in order to return the responses.

Communication between students and the college office or department is through the staff who are available only at office hours. The chatbot seeks to tackle that issue. The bot will be used to have normal conversations along with providing college-related information. The bot uses pattern matching and NLP’s to be able to process the natural language inputs and understand the logic. It then formulates replies based on the matched sequences.

The chatbot resolves queries posed by students such as the location of buildings in the campus, teachers’ schedules, timetables, event notices, information about the staff, and frequently asked questions. The responses to the queries will be according to the data available in the knowledge base. Important keywords will be extracted from the sentences and their respective matches will be searched.

If a match is found, the relevant reply is returned to the user. In cases where the information is not available locally, the chatbot will scrape information from the internet using BeautifulSoup and extract the relevant information and return the corresponding results. The chatbot has a text-based user interface which simulates the feeling of messaging a person. The chatbot facilitates access to the information related to the college to the students from anywhere. This reduces the need for the staff to answer the same queries to every consecutive student and does not confine information access to office hours.

II. SOFTWARE REQUIREMENTS

The chatbot uses the following

A. AIML (Artificial Intelligent Markup Language)^[1]

AIML is an XML based markup language which is used to create artificially intelligent chatbots. AIML makes it possible to simulate human conversation while keeping the implementation simple, easy to understand and maintain.

B. Python^[2]

Python is a high-level, interpreted, interactive and object-oriented programming language. Python provides a dynamic type system with automatic memory management. It supports object-oriented, functional and procedural paradigms. Python also provides support through a large and comprehensive library.

C. Telegram^[3]

This API provides facility to create and connect bots to telegram. The telegram API allows building of customized Telegram clients. It is also open for developers who wish to create similar applications.

D. BeautifulSoup^[4]

BeautifulSoup is a Python library for parsing HTML and XML documents. It creates a parse tree for parsed pages that can be used to extract data from HTML, which is useful for web scraping.

Digital Municipal

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Abstract The Main Purpose of Digital Municipal is to issue license, Permission and Lodge a Complaint through network instead of manual processing. In this, user details are submitted online instead of submitting manually. This reduces duplication and consumes less time. The application provides ease of access with a Secure Login page. It will reduce the applicant's effort by providing reliable and efficient communication online. The man -power requirement by the Government in this procedure can be reduced by such an application. This project is beneficiary both to the Government and Society as it propagates the concept of networking in which each node needs to capture its data but also disseminate their own data. Each node is dependent on other node and then they send the data into the network. Application serves the user with the list of available services with details. The user need not visit the Municipal office manually but he can visit virtually through this Application. The Applicant has the freedom of checking upon the application status and can keep track of the number of applications that have been applied.

Keywords Services, License, Permission, Complaint, Municipal, Police, Admin, User

1. Introduction

The aim of the project is to ease the access of various municipal license for the public. Application serves the user with the list of available services with details. The user need not visit the Municipal office manually but he can visit virtually through this Application.

1. It converts the manual processing into automated processing system between the authorities: City Corporation, District Commissioner Office and Police Station by connecting them through the network.
2. It eliminates the manual presence, paper work.
3. It will reduce the applicant's effort by providing reliable and efficient communication online.
4. Ease of access with a Secure Login page.
5. An applicant need not carry any documents with him often.
6. It requires less man Power for the Government.

The system has four users- Admin, Municipal, Police, Users.

Admin has all the privileges like making data entry, viewing all the details and also to view all the reports. All the requests sent by the user will be accessed and processed by the **Municipal** Staff which will be then sent to the Police Department for further processing based on the category the User has requested for. All the requests sent by the Municipal Staff members will be accessed and processed by

the Police staff by taking respective action and there by sending the verification results to the Municipal Staffs. User can use the application from the given Login ID and Password obtained after registration to apply for the License, Permission and Lodging complaint.

Functions: The system contains various functions that can be used by all the actors.

1. **User Management:** Is an authentication feature that provides admin with the ability to identify and control the state of users logged into the network.
2. **Request License:** Helps the user to apply for the New License.
3. **Renew License:** Helps the user to apply for the Renewal of License.
4. **Cancel License:** Helps the user to apply for the Cancellation of License and the staff to confirm the cancellation.
5. **License Category:** Helps the user to choose the type of license he wants.
6. **Permission Request:** Requesting for permission for Social, Religious or Political type.
7. **Enquiry:** Depending on the License or Permission type requested by the User, it helps the Police Staff members to carry out Spot Verification or Character Enquiry based on which the License and the Permission will be Approved or Cancelled.
8. **Complaint Request:** Lodging Complaint on various issues. Status: Gives the status of the application.
9. **Search:** Helps the Administrator to search the details or the status of various operations, according to the respective numbers or by Staff names.

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Smart Car

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Abstract— Road accidents have become a major disaster in today's world. The reasons for this disaster are pretty well known, ranging from bad road conditions, over speeding, poor traffic light control, negligent driving and improper road designs. Thus there is a great need for having a system that try to reduce road accidents caused by these problems. So, this project aims at reducing road accidents by making a system as less human dependent by automating the cars using the “detect and control” feature provided by IoT (Internet of Things). The project combines two independent systems. The first system lets the car driver to have a good driving experience by avoiding accidents that may be caused by the negligence of the driver. The second system helps the driver to save some time by having a good parking system. The system is focused on non-tech savvy users.

Keywords—Ardiuno, automation, sensors

I. INTRODUCTION

Road accidents have become a major disaster in today's world. The number of accidents that take place has been hiked where it was reported that 1, 37,000 people alone were killed in road accidents and cause for such are well known. Improper design and construction of the roads, violation of traffic signal rules, negligent driving and sleepy / drunk driving by drivers are the major causes. Thus there is a great need for technology that which can assure safety and security in everyday life.^[1]

The Internet of Things (IoT) is one such technology that helps to achieve this. It refers to the environment where network connectivity and computing capability extends to objects, sensors and everyday items not normally considered computers. These items are then capable to generate exchange and consume data with minimal human intervention.^[2]

Smart Car presents a miniature model of an automated system which gives an idea of how road accidents can be reduced by implementing the “detect and control” feature provided by IoT and by making this system as less human dependent by automating the cars as well as the entire parking lot. This project deals with transferring the control to the car, thus tries to reduce human intervention to control the system. There are many factors that lead to the cause of road accidents. The paper gives an idea of how wireless communication can be achieved with the help IoT (Internet of Things).The purposed system is a distributed Smart Car

system consisting of sensors and arduino. It tries to provide a solution for reducing road accidents by having a system that is embedded with Ultrasonic sensor that has the capacity to detect and prevent any collision with the object, detecting the traffic light and following it can be done with the help of color sensors, implementing line follower into this system will help long distance travelling drivers. Automated parking is a method of parking and exiting cars using the switch pad. Controlling all of these operation will be done with the help of sensors is done with the help of

II. ARCHITECTURE DESIGN

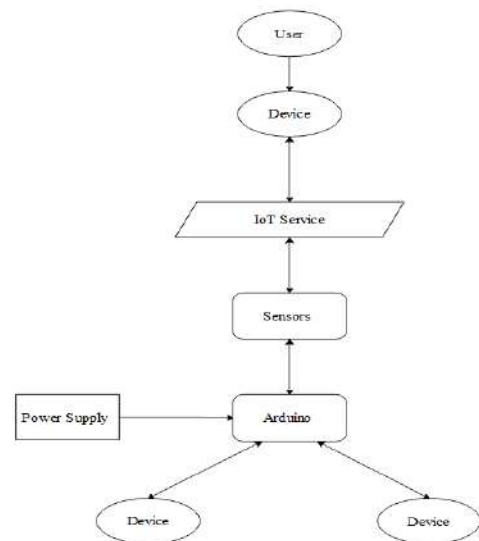


Figure 1: Architecture Design

Figure 1 shows the architecture design of the Smart Car system.

The following gives a brief description of individual component:

A. User

Car driver is the main user of the system. The system is designed in such a way that it can be used by any non-tech savvy users with minimum user interaction required. Once the system is implemented there is very less interaction with the user. The Car is designed to minimize the need of a human to control this system.

Dynamic Malware Analysis and Detection in Virtual Environment

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Abstract—The amount and the complexity of malicious activity increasing and evolving day by day. Typical static code analysis is futile when challenged by diverse variants. The prolog of new malware samples every day is not uncommon and the malware designed by the attackers have the ability to change as they propagate. Thus, automated dynamic malware analysis becomes a widely preferred technique for the identification of unknown malware.

In this paper, an automated malware detection system is presented based on dynamic malware analysis approach. The behavior of malware is observed in the controlled environment of the popular malware analysis system. It uses the clustering and classification of embedded malware behavior reports to identify the presence of malicious behavior. Based on the experimentation and evaluation it is evident that the proposed system is able to achieve better F-measures, FPR, FNR, TPR and TNR values resulting in accurate classification leading to more efficient detection of unknown malware compared to the traditional hierarchical classification approach.

Index Terms—Static code analysis, malware, dynamic malware analysis, clustering, classification

I. INTRODUCTION

Malware threat is a kind of code designed with dangerous intentions. The major role of the malware is targeting to the privacy of users and their information which made the use of malicious activities continuously evolving. However, the high-priority threat is posed by the security researchers.

The widely deployed traditional approaches such as signature-based and static malware analysis require manual inspection of the malicious code by the human analysts. Unfortunately, tremendous growth in the generation of malicious code led the antivirus vendors to face thousands of new malware files every day.

The analysis of large volume of files by this technique evaded due to obfuscation, polymorphism etc. Hence, a reliable and automated analysis is an important point to be able to cope with this threat. With the increase in

readily available and sophisticated tools, use of the new generation cyber threats/attacks is becoming more targeted, persistent and unknown. The advanced malware's are targeted, unknown, stealthy, personalized and zero days as compared to the traditional malware which were broad, known, open and one time. Once inside, they hide, replicate and disable host protections. After getting installed, they call their command and control servers for further instructions, which could be to steal data, infect other machines, and allow reconnaissance.

The Antivirus (AV) software was introduced with an intention to prevent, detect and remove malicious software. This effort mainly focused on content-based signatures to automatically classify and analyze malware samples. Unfortunately, these techniques are essentially susceptible to inaccuracies due to polymorphic and metamorphic techniques. As a result, the Intrusion Detection System and AV are failed achieve complete success in malware analysis. Therefore, dynamic malware analysis tools are widely used to automate and classification malware and benign samples. Dynamic malware analysis involves execution of binaries in the controlled environment to extract the required information for the detection of malicious behavior.

Cloud infrastructure has been growing trend for years by providing opportunities to scale, flexibility and efficiency. Even though cloud emerging in the current scenario but there exist crucial attacks by the hackers such as VM holes and cloud specific threats related to the environment. Providing security and reliability play an important role in the virtualized environment. There are plenty of studies are taking place in the virtualized environment which has the main cause on as networks, Virtual machine manager, guest virtual machines and Operating System (OS).

Cloud data centers are used for a range of always-on services such as private, public and commercial domains. These need to be secure and resilient in terms of cyber attacks as well as component failures and misconfiguration. However, clouds have impaired the traditional detection system due to its characteristics and intrinsic operational research structures. The limitations of a priori attack signature and payload information are

An Augmented Reality Application for Home Styling using Unity and Vuforia

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Abstract—Augmented Reality (AR) enhances one's current perception of reality by augmenting computer-generated or extracted real-world sensory inputs into a real-world environment. Burrow is an AR application that allows a user wishing to furnish their home, to have an interactive Augmented Reality experience to view how different furniture items will appear in their home environment.

Keywords—Augmented Reality, Unity, Vuforia, Home Decor Application, Modern Product Marketing.

I. INTRODUCTION

Interior designing or furnishing a space by a layman involves a lot of assumption and guess work. A piece of furniture that is on display in a showroom might not look the same and blend as desired with the user's space and environment. This problem of uncertainty in design decision making can be addressed by the applications of Augmented Reality technology.

AR is a live direct or indirect view of a physical, real-world environment whose elements are "augmented" by computer-generated or extracted real-world sensory input such as sound, video, graphics or GPS data.

The Burrow application encapsulates AR technology to serve as an aid for planning and designing the interior for any space in a smart, efficient and aesthetic manner. This application will be able to help a person wanting to furnish or decorate a particular area of their homes/offices by providing a clear idea about how an item would look in that spot and how it would integrate with the rest of the room.

AR technology will alter the perception of the world entirely. In terms of consumer adoption, AR is currently being regarded as an extension of existing technologies^[1]. This technology can be both accessed and utilized by anyone with a device or smart-phone that has video capturing abilities. AR offers the biggest potential for the commercial market in

leading key sectors. In the future, this application can revolutionize how marketing is done, for furniture/home decor retailers by making the customer's shopping experience more hands-on and interactive.

II. DESIGN

A. Abstract Design

1) *Architectural Design*: The architecture defines the components, their interfaces and behavior. In Figure 1, Architectural Design for Burrow depicts the relationship between the User who takes advantage of the Augmented Reality furniture application on their Android phones, the Vuforia Database that facilitates Augmented Reality functionality by allowing the Admin to upload markers and objects on it.

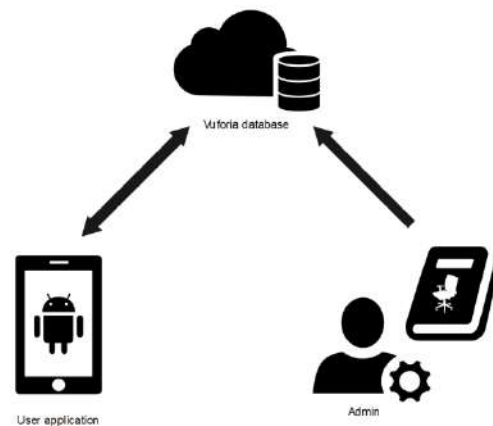


Figure 1: Architectural Design

Use Case Diagram: The use case diagram gives the interaction between the actors and the system. Here, there are three actors--User, Admin and Camera. The user is the primary actor, who initiates the interaction by creating a project.

EXTENDING BAYESIAN LEARNING BASED NEGOTIATION TECHNIQUE TO A TWO-ISSUE BILATERAL NEGOTIATION IN CLOUD

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ABSTRACT

In cloud computing environment, the price and reliability are two important QoS parameters which need to be considered while negotiating agreements for cloud services. In a bilateral negotiation scenario, generally the negotiating agents (be it buyer or seller) will keep the important parameters like price, reliability and deadline secret. There are techniques wherein the Bayesian Learning based Negotiating Agents (BLNA’s) are able to estimate the opponent reserve price and deadline so as to gain advantage in negotiation to achieve higher utility of final accepted offers. To enhance this scheme of negotiation, a new Bayesian learning based negotiation agent is proposed which considers both reserve price(RP) and reserved reliability(RR) as the secret, it tries to estimate the opponent’s reserve price (RP) and Reserve reliability(RR) with deadline kept constant for both the parties. To evaluate BLNA’s performance, seller agent is set as BL based learning agent and buyer agent is assumed to be incomplete information agent. The BLNA is found to be better with overall utility in 44% cases compared to other possible negotiation strategies like tradeoff, fuzzy concession and simple concession.

Key words: Cloud Computing, Service Negotiation, Bayesian learning.

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1. INTRODUCTION

There are 3 service models in cloud. They are Infrastructure-as-a-service (IaaS), Platform-as-a-service (PaaS) and Software-as-a-service (SaaS). The cloud computing is all about procuring Network, Storage, Compute facility from Infrastructure providers and pay them on a pay-per-use basis. Now there are some functional requirements (the various functionalities of the service) and non-functional requirements (reliability or response time of the service) attached to the price paid for the service received from the

Efficient Content Based Image Retrieval technique based on the Cuckoo Search Correlation Method

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Abstract—Content-Based Image Retrieval (CBIR) is a challenging problem in the domain of digital data management. In this research, the Cuckoo Search Correlation based Content Based Image Retrieve (CSC-CBIR) is proposed. Initially, the input image is filtered with the help of the Laplacian of Gaussian (LoG) filter and this filtered images are used to extract the features. The features such as Histogram of Gradient (HOG), Scale Invariant Feature Transform (SIFT) and Gray Level Difference Matrix (GLDM) are extracted. Then the CSC method is used to select the relevant features from the image and order the retrieved images using correlation. These features are provided to the Support Vector Machine (SVM) to classify the relevant images from large dataset. The proposed method evaluated and compared with the existing method and this showed the effectiveness of the proposed method. The average precision value of the proposed model in the retrieval is 0.906, while exiting method obtained 0.8883.

Keywords—*Content-Based Image Retrieval, Cuckoo Search Correlation based Content Based Image Retrieve, Gray Level Difference Matrix, Histogram of Gradient, Laplacian of Gaussian, Scale Invariant Feature Transform and Support Vector Machine.*

I. INTRODUCTION

With rapid advances in Internet and multimedia technologies, the past decade has witnessed a tremendous growth in the number of Web images. The proliferation of images raises an urgent demand for smart image search technologies [1], [2]. As one of the emerging technologies to support fast and accurate image search, visual hashing has received great attention and became a very active research domain in the last decade [3]. As like any information retrieval system, the Content Based Image Retrieval (CBIR) system satisfy the user by retrieving relevant images to the user needs [4]. The main purpose of CBIR is to retrieve a number of similar images from the database to the user when the user provides an example image (i.e. query image) to the system [5]. A modern interactive CBIR system consists of the following main parts: feature extraction, feature reduction, ranking and relevance feedback [6]. Given the feature representations of the images to be searched and the query image, the output of the CBIR procedure includes a search in the feature space, in order to retrieve a ranked set of images in terms of similarity (e.g. cosine similarity) to the query representation [7].

Relevance feedback (RF) is a semi-automatic strategy that collects information from users and then exploits the information by either re-weighting the content similarity measurement or revising the query [8]. Due to large collections of images in the database, efficiency is an important factor for content-based image retrieval. Therefore, developing an efficient indexing method for content-based image retrieval is of great significance [9]. However, despite the continuous development of features, effectively and reliably measuring the similarity between images remains a challenging problem in image retrieval tasks [10]. This paper aims to improve the performance of the CBIR technique by proposing CSC model. The various features are extracted from the input images and the CSC method is used to measure the different features of the image. The SVM method is used to classify the relevant images from the large dataset and the Corel dataset is used to evaluate the performance. The average precision value of the proposed method is 0.906.

The organization of the paper is in the form of the literature survey is given in the section II, the proposed method is briefly explained in the section III and the experimental result is evaluated in the section IV.

II. LITERATURE SURVEY

The latest research involves in the CBIR were surveyed in this section and the several research using the indexing techniques is surveyed.

Pradhan, *et al.* [11] proposed a three-level hierarchical CBIR system/framework where, each level of the hierarchy uses either texture, shape or color image features to reduce the size of the image database by discarding the irrelevant images and at the final level of the hierarchy, it extract the most analogous images from the reduced image database. This method used adaptive Tetrolet transform to extract the texture features from the regions of interest of the images. They proposed a novel edge joint histogram to extract the shape features of the image that uses the orientation of the edge pixels and their distance from the origin together to create a novel joint histogram. This work also introduced another color channel correlation histogram for color feature extraction. The order of the three different feature extraction processes on each level of the hierarchy was not rigid because it is difficult to predict the proper order for the highest retrieval. The indexing of the retrieved image can be used to improve the efficiency of the image retrieval.

Qingyong Li, *et al.* [12] proposed a novel image retrieval system with implicit relevance feedback, named eye tracking

Extraction of Person Body using Appearance & Feature based Algorithms

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Abstract Extraction is considered to be challenging with person body because of various conditions involved inclusive of pose space with high dimension, complex scene features, size involved with image, pose variance and variant person appearance, almost all existing work involves the vigorous training and matching of templates, the proposed method includes the algorithm which is combination of feature and appearance data involved in the complete process. The dimension and person's color with size is considered as fact for identification along with separation among the feature and appearance. Some of the anthropometric set of constraints is being used for the skin color estimation and the combined approach is applied at different level in order to correctly estimate the person body. The feature data estimation includes detection of edge from the image and appearance data extraction including the color of image and shape of image under different illuminant condition. The segments from different regions are combined estimation of foreground and the background during search process.

Keywords Backdrop Eviction, Frame Conversion, Superimposition

1. Introduction

Knowledge about the different regions is the major concern in detection aiding to person layout determination that corresponds to recognizing from the static image data and the recognition of signs involving data estimation.

The segmentation of person body is the common scenario where all video data can be estimated with the background data is available and the motion of person is idealized by the subtracting background. The frame level subtraction is also one fact considered by differentiating among different frames to felicitate the recognition by action.

In this study the proposed method is concerned with the segmentation using background subtraction.

The problem is divided into sequential step which includes the motion detection, foreground estimation and then the person's body identification. The movement of the person is estimated by converting the video data into different frames and then finding the difference between them, the absolute dependency factor is number of person in the frame and the size of the video data used for the estimation.

The edge detection is applied for the image data and video data making use of appropriate detector. Finally the person detection algorithm is applied to the detected edge so that person is determined accurately.

The contribution of proposed methodology address for the

upright estimation of pose, size and shape which includes

- Segmentation done automatically for the person's body present in image data and the video data
- The combination of different approach applied at different levels with feature and appearance by correlating the pixel combination.
- The detection of edge using appropriate detector and the frame difference mechanism for movement detection
- With making the following assumption finally the person body detected applied to torso.

2. Related Work

The approaches classified include the interactive approach that expect the user to differentiate the level into separate foregrounds and backgrounds, the accuracy depends on the input image or the input video data. The methodology is applied to low level to employ the specificity of image with compulsory automation. The object specificity is the major concern involving the size and shape constraints for the accurate person detection [1].

The theory proposes objective functions which consist of two components called balancing term and entropy rate of random walk. Construction of graph takes place that will induce a mastoid further a greedy algorithmic technique is implemented to by exploiting the submodular properties of objective function. Validation of results done on certain benchmarks, in contrary a hypergraph clustering with edges and vertices is being proposed [2].

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Health Monitoring using RFID

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Abstract The RFID card is used to create secure access to the patient's personal data and medical records. The health monitoring using RFID project mainly aims at building a better means of storing and retrieving data. This project uses the hardware kit to get the patient id. The hardware kit will send the patient id to the serial port of the system. The patient ID can be accessed by the respective doctor by scanning the RFID card, after logging into doctor's account. The doctor can view and update patient's medical records and prescriptions. The patient can login into his account and he can perform functionalities that is view his previous medical reports and prescriptions. The admin registers doctors and patients and assigns unique doctor id and patient id along with password to the respective doctors and patients. Certain records, like medical records requires high privacy. Using this technology, all medical information is stored and retrieved online at any given point of time. It is easy to update, adapt and grow. Trying to identify an unconscious patient or patient who is unable to communicate can lead to delays in treatment. With this system emergency departments improve efficiency while enhancing the level of patient care.

Keywords RFID card, RFID reader, Electronic Health Record

1. Introduction

In the current digital era, technology is ruling mankind. A little contribution of one, will take world to a higher level of living which makes them afford almost everything at ease. The world is at its extremes in upgrading itself to present technologies and innovations. To provide a better medical care to all categories of people, medical field is also in its path towards up gradation. An online medical service would enable people to the available quick, better, safe and secured medical treatment. The services helps doctors and receptionists to record day-to-day services provided to the people which would be stored for many years, that in turn helps people in cases of emergency.

Radio Frequency Identification (RFID) is a communication technology which allows for defining some unique characteristics of an object or a living being, usually its identification information, by relating it to a numeric serial number within a tag, and ensures that this number is conveyed by using radio waves. RFID provides a communication infrastructure at the radio frequencies between a special tag and reader device that can detect the tag, and allows for establishing communication between devices within the system without any physical contact, or even without seeing each other. In this regard, communication comfort can be provided with RFID

technologies in environments where technologies which require that the devices must exactly see each other, like the case in barcode systems, cannot be used.

There are different applications of using RFID technologies in health industry. When the significance of human health is considered, it is necessary that information is transferred in a correct and fast manner to rapidly perform the first aid to the patient. By using RFID technologies as integrated with patient information systems, it will easily be possible to identify patients with the RFID card that they carry and to rapidly process the previously recorded information about that patient. Based on this reasonable motivation, an RFID-supported patient monitoring system is designed. The theme comprises of a website that is designed for hospital database for the welfare of patients.

2. Background

The advancements of science and technology in the field of healthcare has improved the quality of people's life. Prior to the adoption of RFID technology in the field of healthcare, barcode technology was used. A barcode is a visual representation of data that is scanned and interpreted for information. Barcode scanners needed a direct line of sight to the barcode, barcodes had less security than RFID and were more easily damaged. These limitations were overcome by RFID technology. The RFID tags can be read from greater distance than barcodes. RFID tags don't need to be positioned in a line of sight with scanner, RFID tags can be read faster than barcodes and contain high levels of security. The RFID card is used to store all the details of the patient as

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Mobile Advertising and Marketing using an Android App

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Abstract— Internet publicizing tasks in which the devoted examination methods are utilized to give the fast and capricious development in reception of cell phone and the quick progression of portable advances and remote systems have given a more extensive degree to crisp and testing openings in versatile showcasing and advertng. Promoting efforts dependably expected to give better outcomes from notices by embracing accessible advancements. Personalization, intuitiveness and omnipresence are the key highlights of cell phones that draws in advertisers. The difficulties, be that as it may, for the Marketers and Advertisers incorporate how to break down troves of information that cell phones transmit and how to remove client commitment bits of knowledge from the tremendous portable information accessible.

This exploration paper delineates and addresses the test by growing Big Data Mobile Marketing examination and publicizing proposal structure. The created structure implement ine proposals on the commercials in view of gathered Big Data on portable client's profiles, get to practices, and examples of versatility. The paper presents prototyping arrangement outline alongside its application and certain trial comes about.

Keywords –*e-commerce; Big Data Mobile Marketing; digital marketing; JavaScript Object Notation; notifications; system-specific code.*

I. INTRODUCTION

Cell phone is universality, accessible to the client all around and whenever, encouraging inputs and the above all it causes advertisers to customize their commercials and advancements when spatial data about client got as area, inclinations and states of mind.

Versatile Advertising comprises three unmistakable Opportunities or Challenges to Marketers and Advertisers: 1) the uncommon reception, 2) the client commitment challenges because of inexhaustible portable datasets accessible, and, at long last, and 3) the potential effect of portability on advanced promoting.

To begin with, the Mobile gadget selection is expanding at a quickly. As demonstrated in [1], "consistently in excess of 1 million new Android gadgets gets actuated around the world". Additionally, Apple, in September 2014, declared

that "it had sold over 10 million iPhone 6's in the initial three long stretches of its accessibility. This is just 1 million more than the more than 9 million iPhone 5c's and 5s's that it sold in 2013[2]." In [3], the McKinsey Global Institute anticipated that the maximum capacity of the portable Internet is yet to be acknowledged; over the coming decade, this innovation could prompt critical change and interruption, not slightest from its capability to convey two billion to three billion more individuals into the associated world, for the most part from creating economies.

McKinsey found gauges that the Mobile Internet could create yearly monetary effect of \$3.7 trillion to \$10.8 trillion by 2025 around the world. This esteem would originate from three primary sources: a) enhanced conveyance of administrations, b) profitability increments in chose work classes, and c) the incentive from Internet use for the new Internet clients who are probably going to be included 2025.

Second, the cell phones accompany different frame factors, innovations, information focuses, and working frameworks. The same is valid with the clients of these cell phones. The Mobile clients show various socioeconomics, individual inclinations, conduct, social nearness, and area utilization. Cohen [4] expressed that as indicated by Nielsen, 61% of the USA endorser possessed a cell phone. The socioeconomics of the portable use in USA demonstrates that 81% of grown-ups matured 25-34 have cell phones. Very nearly 70% of US high school 13 - 17 utilize a cell phone, and half of US grown-ups 55+ possess a cell phone. This demonstrates the reasonable photo of the age variety related with cell phone utilization in USA. As the intricacy of cell phone increments and as the versatile clients' socioeconomics and individual inclinations contrast from each other, the related size of datasets with the gadgets and clients' will increment significantly. So as to connect with the clients definitively, one needs to break down the tremendous and different datasets accessible.

Third, later, May 2014, Gartner Market Analysis [5] uncovers that Mobility progressively characterizes advanced showcasing. According to the Gartner look into, customers are progressively utilizing the Mobile telephones like a remote for their lives. Gartner Mobility Market Survey uncovers that: a) 43% of respondents invest greatest energy in tablets than work area, b) 80% cell phone proprietors utilize their gadget while shopping, c) 53% of searchers buy depend on the aftereffect of a cell phone hunt, d) and 86% utilize their telephones while expending other media.

Patient Monitoring System using Li-Fi

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Abstract— This paper illustrates the patient monitoring system using Li-Fi technology. Li-Fi stands for Light Fidelity. Li-Fi technology proposed by the German Physicist Harold Haas, provides transmission of data through illumination by sending data through varies intensity faster than human eye can follow. Li-Fi is a bidirectional, high speed and fully networked wireless optical communication and is a form of visible light communication. The proposed model helps in the patient monitoring in the hospitals and can be done by using the concept of Li-fi instead of Wi-Fi technology to avoid the frequency interference with the human body. Sensors such as temperature, heartbeat, motion are used in the model to perform its respective functions. These sensors collect the data from the human body and convert in to the digital form using the analog to digital converter. The output of these sensors is given to the microcontroller. The microcontroller that is used here is the AVR microcontroller. The output from the microcontroller is fed to the Li-Fi module which transmits the data in the form of light and the receiver end collects this data and this data of the patient is to the mobile.

Keywords—Li-Fi , AVR, VLC,Wi-Fi

I. INTRODUCTION

In the era of emerging technology, it is necessary to find better solutions for every activity. Nowadays health care expenses are increasing and to reduce this expenses it is required to have a technology based health care systems. Patient monitoring can be done in a very efficient manner using the Li-Fi technology. Patient monitoring refers to “repeated or continuous observations or measurements of the patient, his/her physiological function, and the function of life support equipment, for the purpose of guiding management decisions, including when to make therapeutics interventions, and assessment of those intervention” (Hudson, 1985.).

Patient monitoring done by the Wi-Fi is slower when compared to the Li-Fi and it also has less bandwidth. Reliability is better in Li-Fi than Wi-Fi. Since transmission of data by Wi-Fi is through RF waves, there is a high possibility that these waves might affect the human body. The designation of these signals may be carcinogenic and this has been given by the World Health Organization. To solve this problem, Li-Fi (light fidelity) technology is used for healthy environment. Light fidelity is transmission of information

through optical wireless medium. Sensors such as heart beat, temperature, and motion sensor are used transmitted through the Li-Fi module. Rapid pulses are generated in the form of 0s and 1s. Photo diode is used at the receiver end. Flickering of light takes place at the rate of hundreds of megabits per seconds. By using Bluetooth, the receiver is connected to mobile. The information received in the mobile can be displayed in the mobile through an application. The range of the Li-Fi technology is 10m and secured communication is possible. The transmission of information by light through wireless is termed as Visible Light Communication (VLC).

II. LITERATURE SURVEY

Dr. Harald Hass provided a deep insight in this technology, He introduced an illustration of Li-Fi in the year 2011 at TED Global Conference in Edinburgh, he demonstrated the use of Li-Fi and advantages of Li-Fi over Wi-Fi. His research led many people to work upon this technology [5]. After that Liang Yin (student member IEEE) together with Prof. Harald Hass made an attempt to show the clear difference between visible light communication (VLC) and light-fidelity(LiFi),Further they enlightened us how LiFi takes VLC by the use of light emitting diodes [6].

Harald Hass in the month of December in year 2013 worked upon the Li-Fi modulation and networked Li-Fi attocell concept, along with Prof. Svilen Dimitrov, Prof. ThiloFath, Prof. Irina Stefan and many others contributed to make this technology a big success [7].

Eugene C Nelson professor, Elena E fimovska researcher in the year 2014 researched about the Clinicians understanding of the effect of disease and treatment on patients daily lives is poor. In response to this problem, over the past three decades, hundreds of standard is edmeasures have been developed to capture patient reported outcomes, including symptom status, physical function, mental health, social function, and well being. However, the patient reported outcome measures (PROMs) movement has largely been driven by the agenda of researchers or service payer sandhas failed to focus effectively on improving the quality of care from the patients perspective [8].

Birgit Wilhelm, Senait Forst ,Matthias M. Weber, MartinLarbig, Andreas Pftzner , Thomas Forst . 2006.

Hiding Personal Detail using Overlapping Slicing

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Abstract Preserving the privacy while publishing the medical dataset is one of the techniques that can be implemented to preserve the privacy on the collected large scale of medical dataset. Medical data set contains the information that will include the personal identity of an individual therefore reproducing the same data to third party may gain privacy threats, which will include the personal detail of an individual. This paper proposes a data hiding technique called overlapping slicing for the better privacy preservation of the medical dataset that gets published.

Keywords Privacy, Overlapping Slicing, Privacy Preservation Data Publication

1. Introduction

Preservation on the privacy of the published medical dataset has been most significant issue. The modern era hangs on to the rules and regulations to limit to the different types of information and a bond to store and utilize the sensitive information. Contracts and agreements don't offer assurance that personal detail will not be revealed and end with wrong hands. Particularly when medical dataset gets published. Therefore publishing such kind of medical related datasets we have to make sure that certain techniques have been applied so the privacy is maintained while publishing the medical data. So when the medical dataset is been getting published to outside world proper measures should be taken especially while dealing with the sensitive information about any individual. This activity is called privacy preserving data publishing (PPDP). PPDP provides methods and tools for publishing useful information while preserving data privacy. PPDP offers methods and tools for publishing useful information while preserving the privacy of the medical dataset. In the most basic form of privacy-preserving data publishing (PPDP), there are different forms of identifiers namely:

- Explicit Identifier: These attributes contains set of attributes such as name and social security number.
- Quasi Identifier: These attributes contains set of attributes such as Birth date, zip code and sex.
- Sensitive Attributes: These attributes contains set of attributes such as disease and salary.

Published data becomes more useful if and only if the person's identity is preserved. In this paper we are making

use of technique called overlapping slicing as it conserves the usefulness of data against privacy threats. In the information gathering stage, the data publisher will gather the required information from the record owners. Once the required medical datasets are collected from the record owners, and then that medical datasets will be released to the public or data miner called data receipt. Data miner plays an important role of performing the data mining operation on the collected medical dataset. In the current scenario shown in the figure in the information gathering stage, the data publisher collects the required medical dataset from the record owners i.e. Alice and Cathy. Once the information is gathered from record owners, data publisher will release the data to the public called the data recipient. In the figure shown below data publisher is hospital where it gathers information from patients and patient medical record history and then publish those data to the data recipient who refers to the medical center. We have to preserve the personal detail of an each individual.

1.1. Privacy-Preserving Data Publishing

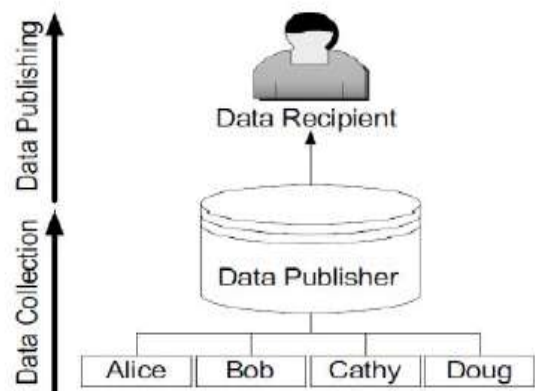


Figure 1. Data collection and publication

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Improving TORA Protocol using Ant Colony Optimization Algorithm

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Abstract A wireless ad hoc network (WANET) or MANET is a decentralized type of wireless network and it does not rely on a pre-existing infrastructure. Instead, each node participates in routing by forwarding data for other nodes, so the determination of which nodes forward data is made dynamically on the basis of network connectivity and the routing algorithm in use. The Temporally-Ordered Routing Algorithm (TORA) is an adaptive, distributed, loop-free routing protocol for multi-hop networks which has minimum overhead against topological changes. Quality of Service (QoS) support for MANET in TORA has become a challenging task due to its dynamic topology. This paper proposes QoS enabled Temporally Ordered Routing Algorithm using Ant Colony Optimization called AntTORA. ACO algorithms have shown to be a good technique for developing routing algorithms for ad hoc networks. ACO based routing is an efficient routing scheme based on the behaviour of foraging ants. The collective behaviour of ants helps to find the shortest path from the nest to a food source, by deposition of a chemical substance called pheromone on the visited nodes. ACO technique is used in TORA protocol to optimize multiple QoS metrics like end-to-end delay, throughput, jitter and so on. The performance of TORA and AntTORA are analysed using network simulator-2. The results presented in the end also help the researchers to understand the differences between TORA and AntTORA, therefore to choose appropriate protocol for their research work. Our simulation study shows how this approach has significantly improved the performance of the ad hoc networks.

Keywords MANETs, ACO, Routing protocols, TORA, Ant-TORA

1. Introduction

A rapid growth and research has been seen in the field of Mobile Ad Hoc Networks (MANETs) due to their dynamic nature and infrastructure-less end-to-end communication. A Mobile Ad Hoc Network (MANET) is a collection of autonomous mobile nodes which dynamically form ad hoc network without the use of any infrastructure or centralized administration. It is sometimes also called as a multi-hop wireless network [1]. Routing in MANETs is a challenging task and has gained a remarkable attention from researchers worldwide. This has led to the development of different routing protocols with each protocol providing an improved version in respect to various strategies for a particular network scenario. None of the existing protocols is the best that justifies the characteristics and is suitable to perform an efficient routing. Researchers strive to uncover the efficiency of existing routing protocols by enhancing their performance.

Lot of techniques exist which can be applied on the

existing protocols to make them more efficient and less vulnerable to outer attacks. In this section, we have discussed about TORA protocol. Also we have discussed the Ant Colony Optimization technique which is implemented on existing TORA routing protocol as AntTORA to enhance their performance.

2. TORA Routing Protocol

The Temporally Ordered Routing Algorithm (TORA) is an algorithm for routing data across Wireless Mesh Networks or Mobile ad hoc network. The TORA does not use a shortest path solution, an approach which is unusual for routing algorithms of this type. TORA builds and maintains a Directed Acyclic Graph (DAG) rooted at a destination. No two nodes may have the same height. The protocol performs three basic functions: route creation, route maintenance and route erasure. Nodes need to maintain the routing information about adjacent (one hop) nodes. During the route creation and maintenance phase, nodes use a height matrix to establish a Directed Acyclic Graph (DAG) rooted at destination. The links are assigned based on the relative height metric of neighbouring nodes. During the time of mobility the DAG is broken and the route maintenance unit comes into picture to re-establish a DAG routed at the

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Securing the Data in Cloud Using Enhanced Homomorphic Cryptosystem

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Abstract—Cloud is a buzzword in the IT world which centralizes storage and computing in the distributed data centers managed by the third part owners. The data processing since done across the internet and private networks it may be susceptible to variety of attacks. In order to overcome threats users need to use their own encryption algorithm to secure their data and the data to be decrypted whenever it is to be processed. Homomorphic Encryption techniques empower processing of encrypted data and ensure lower latency and computational complexity. In this paper, Enhanced Homomorphic Cryptosystem (EHC) is chosen for augmenting data security in cloud computing.

Keywords—Cloud, Homomorphic Encryption, EHC, Security.

I. INTRODUCTION

Cloud computing is an art of provisioning access to remote servers through the internet. It provides resource in a shared manner based on the demand. The use of internet globally asks for the need of higher security to the data from the cloud.

The providers dispense the data store as per the users need in third-party data centers. Cloud could be used as different services and deployments [1]. This results in risks of potentially sensitive data from insider attacks which is considered as the 6th largest threat by Cloud Security Alliance Report (CSA) in the cloud context. Thus, Cloud Service providers (CSP) must ensure sufficient measures to verify the integrity of their employees. Additionally, suspicious activities from datacenters must be well monitored.

From the data security perspective, cloud computing imminently poses newer challenging security threats for varied reasons. Firstly, traditional cryptographic primitives for data security cannot be applied since the users lose data control. It suffers from traditional security threats of the networks plus some specific threats such as side channel attacks, virtualization vulnerabilities and abuse of cloud.

Another disadvantage is that, the public key and private key is produced by server, it sends the public key to the client. Using this public key client encrypts the data and sends to the cloud where cloud decrypts the data sent by the clients and stores it in the database. The data can be viewed by the server and there are chances that the data can be hacked.



Fig 1: Storage in the cloud

The increasing network bandwidth, flexible & reliable networks enable users to subscribe high quality services from data/software residing on remote data centers. As a result, users are at the mercy of their CSPs for the availability and integrity of their data.

Security concerns with cloud fall into two broad categories: security issues faced by providers and security threats for their customers. Thus the “providers must ensure that their infrastructure is secure and that their clients’ data and applications are protected, while the user must take measures to reinforce their application and use strong passwords and authentication measures” [1].

IoT Based Energy Meter (AMMP)

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Abstract The world we live in has limited energy resources and thus there exists a need to save as much as energy as possible. We have a traditional energy meter which is used to measure the amount of electric energy consumed in any residence. But this traditional energy meter has quite a few shortcomings such as construction liabilities, narrow bandwidth, low rate, poor real time, not two-way communication quickly etc. To overcome these problems, we use Energy Meter based on the Internet of Things. Countries such as the United States of America and a few European countries have adopted Automated Meter Reading (AMR) systems. The methodology we propose uses hardware Raspberry Pi which is used to take data from the device and calculate the bill which is sent to the customer.

Keywords IOT, Raspberry pi, ADC

1. Introduction

Internet of things (IOT) is a network comprising of electronic devices and sensors connected to exchange information over the internet. In our experiment, the current is extracted from the electronic devices and sent to the ADC, where the converted values are sent to the Raspberry Pi where the power value is calculated and then sent to the database across internet. Before the invention of the smart meter traditional meters were used.



Figure 1. Traditional Energy Meter

But they had problems such as more prone to errors and not being able to detect tampering. IOT is comparatively cost effective than SMS which makes monitoring energy meters at lower cost possible. Month end consumption reports are generated which is monitored via web portal. Registered customers can also make their payment online. The customer initially has to go to the website and register, this is where the

customer details gets recorded in the database, with an auto generated registration number which becomes the primary key. He later need only to log into his account and check for payment details. The payment notification can be send either to his email or as an SMS to the customer. Through such a system the users can be aware of their electricity consumption and give a helping hand towards Energy meter. We will be looking into the working of energy meter and its circuit diagram in Section 2 and will follow into the Hardware and Software in Section 3 and 4 respectively, and we finally end with conclusion in Section 5 and Reference in Section 6.

2. System Design

This section deals with overall working and system design of this project. Our main aim is to send the power consumed by the customer directly to the utility without manual reading at the end of the month. The power consumed and its corresponding bill is then mailed to the customer. To simulate home wiring and meter we have used a simple circuit. Information is transmitted by modulating a continuous transmission signal by amplifying signal's strength or varying its frequency to add or take away data. The current flow through this circuit is measured using a current sensor which is analog and converted into digital using an ADC. The current value is obtained and the power is calculated using Raspberry Pi. This value is then sent to the database and stored and the total bill is calculated and email is generated for the respective user. So if a user wants to avail this service he/she should register and the pi is set up for the user and thereafter the working is as mentioned above. The user is also provided with a service of online payment of his bills and given deadlines. Failure of payment will be notified to the admin and he is authorized to take further actions.

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Energy Saving VM Placement in Cloud

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Abstract—The tremendous gain owing to the ubiquitous acceptance of the cloud services across the globe results in more complexity for the cloud providers by way of resource maintenance. This has a direct effect on the cost economy for them if the resources are not efficiently utilized. Most of the allocation strategies follow mechanisms involving direct allotment of VMs onto the servers based on their capabilities. This paper presents a VM allocation strategy that looks at VM placement by allowing server capacity to be partitioned into different classes. The classes are mainly based on the RAM and processing abilities which would be matched with VMs need. When the match is found the servers from this category are provisioned for the task executions. Based on the experimentation for various datacenter scenarios, it has been found that the proposed mechanism results in significant energy savings with reduced response time compared to the traditional VM allocation policies.

Index Terms—Cloud, virtual machine, RAM, CPU, energy, response time

I. INTRODUCTION

Cloud is a modern technology that has evolved into all the main streams of computer science. A prime concern in the server virtualization is VM placement. It is the process of mapping the VMs to the servers to suit both the consumers and the providers' expectations. Most of the stated gains/benefits from the cloud comes from the resource multiplexing [1] using virtualization technology that allows to improve resource utilization and energy efficiency.

When there are limited resources in the datacenter, mapping can be done manually. But, when the resources are enormous manual mapping becomes complex and not feasible. This necessitates automated VM placement mechanisms carried out at either initiation time/run time.

In the cloud computing context, resource provisioning is the aspect which guarantees the satisfactory end user/consumer services. The IaaS providers provision the virtual machines as the resource for users job requests. The problem in these [2] type of provisioning is how and where to place the virtual machines owing to users request.

Cloud computing led to the setup of large-scale data centers with thousands of computing nodes consuming large amounts of electrical energy. These data centers incur high operational costs and emit carbon dioxide to the environment leading to the greenhouse effect. The reason may be high energy consumption due to the quantity of computing resources, inefficient hardware and resource usage. Green Cloud computing foresees to achieve efficient processing, infrastructure utilization and also to minimize energy consumption [3]. The virtualization technology allows Cloud providers to create multiple Virtual Machine (VM) requests on a single physical server thereby increasing resources utilization.

There can be incompatibility between user requests in cloud and specification of physical machine, which may lead to problems like poor load balancing, energy-performance trade-off and large power consumption. Reducing energy & better resource utilization could be handled by consolidating the VMs using dynamic migration facilitating idle node switch off to lower powering mode. It was envisaged that idle servers consume upto 70% of its peak power [4,14]. Shifting to lower power modes help to decrease the energy consumption. This improves the performance & provides better quality of service.

The proposed mechanism utilizes 3 classes namely, avid, confronted and intended state. This sets aside resources like RAM and CPU to be used in co-ordination with the users request by considering the factors like response time and energy consumption.

The rest of the paper is organized as follows. Section II presents an overview of the work done, section III depicts problem description, section IV describes system architecture, section V outlines the implementation, section VI shows the results and the conclusion in section VII.

II. RELATED WORKS

Resource allocation is one of the prime challenges in cloud computing. It requires many factors to be considered from the providers' side in order to sustain its market value. Among the factors, energy consumption is

LISA (Life Saver)

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Abstract Increase in population on this planet has also increased the number of vehicles that travel on the roads. This resulted in more number of vehicles and has resulted in a heavy traffic in almost all the major cities and countries. The congestion in traffic has resulted in fatal vehicle accidents all over the world. Even after the existence of emergency services by the governments of all countries, the delay in the approaching of these services like ambulance due to the heavy traffics has been a major problem. The existing solutions that are already being implemented are traffic policing organization such as state traffic police or highway patrolling police. The other measures that are already being implemented are the sirens that are embedded with the emergency services vehicles so that the vehicles around them can create a clear passage to it. Primarily LISA has a feature that allows the ambulance driver to indicate the vehicles on the traffic at a radius of approximate 2 kilo meters and making sure of a clear lane on the road. The project LISA takes the source and destination coordinates of the ambulance driver and sends them to the server established which is present over the internet. This server in turn switches the LEDs present over the roads and indicates the vehicles in that range that an ambulance is coming their way and thus clearing a lane for the ambulance to pass without any traffic congestion. With LISA being implemented on the roads of a busy traffic, it is possible to curb the losses caused by the delayed services of emergency services.

Keywords Arduino, Wifi Transceiver, Webserver, JSON

1. Introduction

Traffic management is the severe problem of today's society because of urbanization. This cause traffic jams at the road junctions which in turn causes delay in ambulance response which in turn causes loss of life. Through this project we intend to design a system which eases the congestion faced by ambulance in heavy traffics. There are so many examples where ambulance get struck in traffic load, Ambulance has to wait for some minutes-hours to clear the traffic load. Patient may die because of lack of treatment at proper time. So this application reduces the time consumed by an ambulance to reach the hospital. This application is an android based tool that allows the ambulance to reach faster by dynamically controlling LEDs on the lane.

2. Objectives

As a traffic controlling system, LISA's main objective is to clear the traffic ahead of the ambulance by signaling the traffic over the road.

O1: Authorized Access. Only authorized users can use the mobile application of LISA. This is made possible by

issuing a Secret ID to the ambulance drivers who register with the admin with appropriate credentials.

O2: Performance. Performance of LISA depends on the mobile phone used by the user, the internet connection availability and speed of the data services such as bandwidth.

3. Methodology

The project LISA contains three platform which makes the project accomplish its goals. The LED lights which should be built over the roads are connected to a Arduino which switches the LEDs digitally. This Arduino takes the input from a WIFI Transceiver called as ESP8266. The mobile application built on Android platform sends the coordinates of the ambulance to the web server. The web server in turn sends the LED IDs associated with the location coordinates to the WIFI transceiver which switches the LEDs through the Arduino. LISA contains major 3 components such as the ambulance driver who uses the mobile phone application, the web server which guarantees data presence all over the network and the MicroController which is the reason to switch the LED lights on the road. Here the App is responsible for sending the co ordinates to the server which is built on PHP scripting and uses MySQL as data storage to process it. The MicroController executes the switching of LED lights according to the data sent by the server. The data from and app being the location co-ordinates is converted

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Real Time Accident Detection and Information System using Sensors, Database and Twitter

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Abstract— Today the major public health concern is the Road Traffic Injuries. Most of the time people die on the road without the emergency services. This paper proposes easy and inexpensive ways to reduce the number people dying in the road accident using the GPS, GSM, Database, Sensors and Twitter notification technologies. GPS module is used to track the current location of vehicle, GSM module is used to send the SMS notifications to concerned authorities like family members, policeman and hospitals in case the accident has occurred. This SMS is then converted to tweet and sent to the concerned authorities. The sensors include the vibration sensor and flex sensor, which sense the vibration and resistance of the sensor element being varied by the dent caused by the accident on the surface of the vehicle. This system efficiently finds out the coordinates of the location of the vehicle using GPS module and sensors will detect if the accident has occurred, hence alerting the user of the system. The system is having a website running on a server that has database capabilities. This system is compact and can be easily embedded inside the vehicle.

Keywords— Public health concern, Road Traffic Injuries, GPS, GSM, Sensors, Tweet.

I. INTRODUCTION

Accidents are very common thing these days and it also causes increasing number of deaths everyday. Safety and congestion have become the primary problem that has been caused by the increase in the number of vehicle on road. Today the major public health concern is the road traffic injuries and fatalities. The analysis by the Ministry of Road Transports and Highways Transport of the government of India reveals that about 1374 accidents and 400 deaths take place every day on Indian Road which implies that 57 accidents and 17 deaths on an average in road accident in India every hour.[1] Total number of road accidents in India increased by 2.5 per cent from 4,89,400 in 2014 to 5,01,423 in 2015. The total number of people killed in road accidents was increased by 4.6 per cent from 1,39,671 in 2014 to 1,46,133 in 2015.

Road accident injuries have increased by 1.4 per cent from 4,93,474 in 2014 to 5,00,279 in 2015. The severity of road accidents measured in terms of number of persons killed per hundred accidents has increased from 28.5 in 2014 to 29.1 in 2015. Out of total road accidents 28.4 per cent, 24.0 per cent and 47.6 per cent of road accidents took place on National Highways, State Highways and Other roads in the year 2015.[2] Global death caused by accident accounts more than 1.3 million each year, which accounts 2.2 per cent of all the deaths in the world. About 20-50 million people are injured or disabled. More than 50 per cent of all the accident related deaths are among the youths between the ages 18-44. Most of the study suggests that a sizable percentage of deaths can be reduced if there are fast and immediate emergency services.[1]

Most of the time people die in the middle of the road without emergency service. In many place people doesn't even show courtesy to help the victim, by calling the medical facilities. In order to prevent such instances we have come up with the system which detects accidents in real time using sensors and simultaneously informs the concerned authorities by sending alert notification of the accident. In our system we use Global Positioning System (GPS) to locate the vehicle in real time. Hence we not only try to detect accident but also keeping track of the vehicles movement for every time instance. Global System for Mobile-Communication (GSM) is used to send the updates to the concerned authorities like police station, hospital and relatives of the victim. Updates given by the GSM are of SMS, which is then converted into live tweets for twitter. We are using SMS to update the database with the GPS Coordinates values that is received from the accident detection kit that is placed inside the vehicle. The sensors include the vibration sensor, which sense the vibration of the vehicle and the flex sensor, which detects the change in the resistance of sensor element being varied by the dent caused by the accident on the surface of the vehicle.

Mobile Based LAN Control

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Abstract This paper demonstrates to control and monitor the LAN network from a wireless handheld device i.e. cell phone from anywhere irrespective of distance. In concern, the computers are grouped together to form a network. To manage and control activities of network while in office is an easy task. While you are outstation/away from office to monitor and control the network, instead of depending on third party information, you can always have your cell phone serve the purpose, login anytime to application and see who is busy with what in the office. This paper provides the maximum details about the network to the administrator on their mobile phone, when administrator is away from office/goes out station.

Keywords Android, Feasibility, UML diagram, Wireless Media, Remote Monitoring & Control, AT Commands, Password Security, Android based Mobile phone

1. Introduction

Our society is more and more pervaded by computer controlled devices. Today the usage of mobile phones has rapidly increased. We can control any activity through the mobile phones. The aim of our project is to control and monitor the network from a wireless handheld device i.e. cell phone from anywhere irrespective of distance. Suppose you have a Local Area Network (LAN) setup at your office. Sitting at home you want to learn the LAN status, you can do so by storing the application in your cell phone and executing the same. In the era of mobile devices, wireless devices are widely used and it has penetrated every part of our life, but remote monitoring of networks through mobile device is still a mirage, this application based project is an effort to make this mirage a reality, and this is where the genesis of this project lies. Consider a LAN setup with server machine and also that all clients are connected to the administrator via mobile phone. Using the mobile phone the administrator monitors and controls the activities of the clients in a LAN; such as a small text file residing in any of the client or server machine can be opened in your mobile phone. It is a cost effective solution that will provide controlled monitoring of LAN network remotely and enable network security against intrusion in the absence of administrator in office.

2. Proposed System

Proposed system providing the following feature:

1. Offers valuable wireless connection
2. There is no need of GSM modem in our application so it is cost effective.
3. The area of covered services is more than current system.
4. It requires lesser time to establish data connection than current system.
5. The maintenance of the product will be less than current system.

3. System Objectives

Features controlled by the proposed system are as follows:

- **User Creation:** Contains user information.
- **Process List:** Get the list of all the processes running on the remote machine.
- **Read:** You can read the drives, folders, files of any of the client machines / the server machine from cell.
- **Open File:** A small text file residing in any of the client or the server machine can be opened in your cell phone.
- **Message Transfer:** Broadcast messages to clients, Server from cell.
- **New File:** Create a new document in the cell phone and save the same in either the server or client machine.
- **Activate Process:** Activate different processes in either the server machine or any of the client's.
- **Forgot Password:** It generates new password and sends to the cell phone.
- **Change Password:** It is used to change the password for the Client.

4. Architectural Diagram

Administrator sends his request through his mobile phone

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Classification and Segmentation Techniques for Detection of Lung Cancer from CT Images

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Abstract— Information Technology(IT) has played an important role in all aspects of human life. In the recent years, it has influenced the medical and healthcare field. Image processing together with machine learning and other technologies are used to study medical images for earlier disease detection and treatment. Diseases like cancer should be discovered as fast as possible where time factor is vital. Medical images have factors such as noise, uncertain tumor boundaries and large variation in tumor appearance which makes it difficult to find exact tumor region. To overcome these problems, several methods are available for helping the radiologist in accurately detecting the cancer. This paper has reviewed classification and segmentation techniques used in detecting the lung cancer tumor and evaluated the performance of each approach. It has proposed a method for effective identification of lung cancer. The proposed method gave 79.166% accuracy.

Keywords— Image processing, classification, segmentation, lung cancer, medical imaging.

I. INTRODUCTION

Lung cancer is the multiplication of abnormal cells which is uncontrolled, that starts in either or both the lungs. When cancer starts in the lung cell, it is called as primary cancer. Abnormal cells split quickly to form tumors. As the tumors grow in size, they restrict the ability of the lungs to provide bloodstream with oxygen. There are two types of tumors: Benign tumors and Malignant tumors. Benign tumors stay in one particular place and do not spread [1]. Malignant tumors are the hazardous ones and extend to the other part of the body through bloodstream [1]. According to the World Health Organization (WHO), each year 7.6 million deaths are caused by the cancer and represents 13% of all global deaths. Lung cancer is considered as the number one cancer killer [1].

Lung cancer is diagnosed using Computed Tomography (CT) scans, chest X ray etc. Lung cancer forms the tumor but all tumors are not cancerous which makes it hard to detect the lung cancer. Exploring the medical image is a challenge and involves obtaining the insight value, analysis and diagnosis of the specific disease. In this modern world of computerized living, several Computer aided Diagnosis (CAD) systems are developed for detecting cancer at initial stage. It helps the radiologists to reduce the errors and the misinterpretations. But the CAD systems developed for detecting the cancerous tumor

are not so accurate. There is a need of the system that fully automates the cancer detection showing the tumor region.

Literature review in this paper provides several segmentation and classification techniques used in lung cancer detection. The purpose of this paper is to review the related work and summarize different techniques used and propose a method that improve the performance of the system. The paper is organized as follows: Section II gives an overview of the CAD system, section III gives Literature review, section IV gives the summary of the related work, section V gives proposed method and section VI provides results and discussion and VII gives the conclusion.

II. OVERVIEW OF THE CAD SYSTEM

The system consists of Pre-processing stage, Segmentation stage, Feature Extraction stage and Classification stage. In the pre-processing stage, quality of the image is enhanced and noise from the image is removed. This is important since CT images have noise and makes it difficult to identify the tumor region correctly. In the Segmentation phase, the image is divided into several segments. The ultimate aim is to represent the image into something valid for easier analysis [2]. In feature extraction, the large data set is reduced into set of features. Features are distinctive properties of the input and helps in differentiating the categories of the input pattern. Features represent the raw image and are given to the classification process. In classification, the images are classified according to the features given to it. Classification forms classes and differentiates the images. The aim of classification is not only to reach the accuracy but to identify which part of the body is infected by cancer. Lung cancer images can be classified as cancerous or noncancerous. Several machine learning and data mining techniques can be used for segmentation and classification purpose for improving the accuracy of the cancer detection. Figure 1 shows the main stages in the lung cancer detection system.

III. LITERATURE REVIEW

Dr.T.Arumuga Maria Devi et.al [3] implemented a technique for automatic detection of lung cancer from CT images. Image was enhanced using the contrast limited adaptive histogram. Segmentation was performed using the thresholding based on entropy. Finally, SVM was used for classification where it gave accuracy of 93%.

Multi Keyword Search over Encrypted Cloud

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Abstract Cloud computing has been considered as a new model of enterprise IT infrastructure, which can organize huge resource of computing, storage and applications. It enables the users to access the network to a shared pool of configurable computing resources with great efficiency and minimal economic overhead. In the era of big data, huge amount of data produced world-wide is stored on the cloud. Despite the various advantages of cloud services, outsourcing sensitive information to remote servers brings privacy concerns. The cloud service providers who store user's data may access sensitive information without authorization. A general approach to protect the data confidentiality is to encrypt the data before outsourcing. In this study, we address the problem of privacy preserving using multiple keywords search over encrypted cloud data. Our approach provides multi-keyword search based on coordinate matching.

Keywords AES Algorithm, Coordinate matching, Cloud data security

1. Introduction

Cloud computing enables cloud customers to remotely store their data into the cloud so as to enjoy the on-demand high quality applications and services. Cloud storage services allow the user to access files from any computer, as long as it is connected to the Internet. The user gets few Gigabytes of storage without paying anything at all. The biggest advantage of using cloud storage services is that the user does not have to carry important files everywhere. They can simply login to the cloud storage account and access files from anywhere. Files uploaded to the cloud can be easily shared with any number of users. The privacy concerns in cloud computing motivate the study on secure keyword search [1].

The system model of existing studies consider one data owner, which implies that in their solutions, the data owner and data users can easily communicate and exchange secret information. When numerous data owners are involved in the system, secret information exchanging will cause considerable communication overhead. We explore the problem of secure multi-keyword search for multiple data owners and multiple data users in cloud computing environment. In this paper, we address secure multi keyword search over encrypted cloud data [42].

Without encryption, the files can be accessed by unauthorized users. To avoid unauthorized access, we hide the information using encryption. Encryption is the process of changing information in such a way as to make it

unreadable by anyone except those possessing the key which allows them to change the information back to its original, readable form. Single-Keyword search is when a user searches and lists for exactly one term and not its variations. Multi-keyword search is when a user searches and lists for multiple variations of same keyword. Among various multi-keyword semantics, we choose the efficient principle of coordinate matching, i.e. to find as many matches as possible, to capture the similarity between search query and data documents.

2. Related Work

Wang *et al.* studied the problem of secure ranked keyword search over encrypted cloud data [3]. The authors work on the problem of searchable index before outsourcing the encrypted document. The authors propose a single keyword searchable encryption scheme based on ranking. The early work of Sangwan *et al.* solves secure ranked keyword search which utilizes keyword frequency to rank results instead of returning undifferentiated results [4]. However, it only supports single keyword search. Song *et al.* were the first to discover the method for keyword search over encrypted and outsourced data [5]. The authors begin with the idea to store a plaintext documents on data storage such as mail servers and file servers in encrypted form to reduce security and privacy risks. Koutrika *et al.* presented a data cloud in which cloud search is performed on the basis of query summarization approach [6]. The authors have performed a query refinement model based on the summarization. Based on this summarization the query is presented to the web architecture and relatively the search is performed for reliable and effective cloud service. A multimedia search for the cloud architecture is suggested by Daniel E. [7]. In this

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Smart Street Light

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Abstract— With the growing population, the demand for existing resources is increasing at an unprecedented rate, resulting in shortage of resources. It is therefore important to use resources efficiently to extend the life of existing resources. Smart Street light is a small attempt to create smarter streets that aims to save the electricity largely consumed by street lights by intelligently regulating the lights based on traffic and environmental light conditions. A resulting system would be a fully automated streetlight system that switches itself ON & OFF based on environmental factors and traffic on the streets, streets that proactively monitors and reports faulty street lights and lights that are nearing the end of lifetime. Since Streetlights are connected to one other, they form a hypothetical network that spans across the city and therefore can be used as a means to collect useful information such as pollution levels across the city, information about speeding vehicles, crime, etc.

Keywords— LDR, LED, PIR (Passive Infrared), Raspberry pi, Smart Cities.

I. INTRODUCTION

Street lights play an important role in the night life of a city. Studies show that driving outside of daylight hours accounts for 40% of fatal and serious injuries [1] caused by accidents on the streets. Hence most cities are equipped with an ample number of streetlights to ensure safety of drivers, vehicles, pedestrians and to provide a safe environment to the citizens. This increase in number of streetlights would also mean an elevated consumption of electricity and any carelessness in monitoring or operating these lights would result in unnecessary wastage of important resources. [2]

Some of the noteworthy problems observed with existing streetlights are discussed below. Conventional street lights use sodium lamps that waste energy, generate

high level of CO₂ and light it emits is monochromatic, hence the only mode of operations possible is switch ON & OFF and there is no way to adjust the intensity of light based on the given scenario. At present, switching ON & OFF street lights is mostly manual and any error on the part of the worker results in the all street lights remaining ON

throughout the day or during night time even when there are no vehicles or pedestrians. This substantially increases consumption of electricity and indirectly effects the citizens who now need to pay excess towards electricity bills. Another drawback in the current system is that any faults in the lights remain unnoticed until complaints are received from customers. Once the complaints are logged, the problem then needs to be addressed by arranging crews to the site. A simple automated system that proactively addresses all the problems mentioned above is what we would need in creation of a smarter city.

The proposed system successfully overcomes these drawbacks in the existing system. Unlike the existing system, now the process of switching ON & OFF is completely automated. Street lights are switched on only under dim lighting conditions and are automatically turned OFF during the day. At night, street lights glow with the full brightness only upon arrival of vehicle or presence of a pedestrian and at other times glows with some minimum intensity. The condition of the lamps in street lights are monitored periodically by the system and any fault would trigger a notification to the concerned personnel who can then make necessary arrangements as soon as possible to fix the problem. The proposed system also equips the system with pollution sensors that report the pollution level in a given city.

II. LITERATURE SURVEY

Smart street lights were implemented in smart cities such as Shanghai, Nuenen, Copenhagen, Tilburg, Porto in view of saving power and maintenance cost. In smart cities such as Tilburg, Nuenen, sensor based units were installed on street lights which could dim light to 20% when there is no activity on streets and increase brightness to 100% upon detection of a pedestrian, cyclist or a car. This project did not have remote monitoring feature due to which delay in fixing faults in street lamps occur frequently [3]. In Copenhagen smart city which is located at China, radio modules were equipped with street lamps to allow for instant alerting on failures. [4] But radio frequency has its own demerits.

Shop4Notes – A Service to Purchase and Manage the Orders for Academic Notes

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Abstract—This paper presents the general overview of the steps involved in the implementation of the service Shop4Notes. Shop4Notes is used to link the customers with Shop Proprietors of photocopy centers. Students usually tend to waste their productive time in the photocopy center waiting for their notes to be printed. Due to the limited number of photocopy machines, a large crowd is accumulated at peak times such as exams making it difficult for the shop proprietor to manage the orders and the crowd. The misuse of the situation at rush hours to avoid making the payment for the order can be avoided. The Shop4Notes service addresses the above problems. It also enables the shop proprietor to manage orders efficiently.

Keywords—Shop4Notes, Students, Shop Proprietor;

I. INTRODUCTION

The importance of mobile phones in our everyday life is undeniably unending. This is so because there is ongoing tremendous transformation, where mobile phones are no longer the ordinary communication device it used to be. It has become a colossal point for individuals and businesses alike. This is made possible through the development of mobile applications. Presently, the use of mobile applications can be seen in areas such as communication, education, social media, business, shopping and banking.

The most commonly used operating system, Android is developed for smartphones and tablets. It is based on Linux kernel and uses Dalvik Virtual Machine (DVM) for executing Java byte code [1]. Some features of Android are-

- Highly customizable nature
- Reasonable price
- High degree of ease due to presence of PC like apps
- Hardware and Software features
- Full control over OS

The project Shop4Notes is a service which enables customers to place an order for notes from photocopy centers using an Android Application, and provides a Web service for the Shop Proprietor to process the orders. The user friendly interface of the App can be used by the customers to view available notes based on course and semester.

The customer can then place the order for desired notes and pay using an online wallet. The Web Application provides the Shop Proprietor with features to manage users and process orders efficiently. This in turn reduces the waiting time of the customers thereby making their entire process hassle free and time efficient.

It can be noticed from the further sections that, in a customer-vendor business, Shop4Notes will play a major role in linking the customer and the vendor with high flexibility and availability. By implementing online payments, the transaction is also made to be more accurate and seamless which also promotes cashless transactions, a professed role of Digital India.

II. LITERATURE SURVEY

Previously, customers were required to go to the Photocopy center and wait in queue to order for notes. Once ordered, the customer would have to wait to receive the printed notes. Manual cost calculation can sometimes be inaccurate.

A Survey was conducted at the stationery shop, “St. Joseph Xerox Center” outside the college, “St. Joseph Engineering College”

Issues found-

- Long queues
- Long waiting time
- Non Payment issues

The objective of Shop4Notes is to provide on-the-spot information about various notes available and its cost, payment methods, etc. at the customer's fingertips.

Shop4Notes application has the following features-

- Maintains a history of purchased notes
- Provides information regarding available notes
- Request to print miscellaneous documents
- Online Payment

The advantages of Shop4Notes are-

- Easy to use
- Customer satisfaction
- Time-efficient application
- Secure online payment transactions

Energy and Cost Efficient Dynamic Load Balancing Mechanism for Resource Provisioning in Cloud Computing

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Abstract

Cloud computing paradigm has gained enormous success through its heterogeneous services and diverse utility. The widespread access of cloud technology requires due considerations to some of the vital parameters about its available resources under service. Among them response time, load balancing, energy consumption and resource utilization are of primary concern. In this paper, a dynamic load balancing policy based on the performance, resource utilization and the power consumption is implemented. It checks for the performance and the load factors in order to allocate a resource for users' jobs request. It also considers resource utilization and power consumption as a factor based on it. The results obtained after the simulations with various combinations of the datacenters clearly indicate that the proposed method results in effective reduction in response time and power consumption and improved resource utilization by comparing with the considered existing mechanisms.

Keywords: Cloud Computing, Load Balancing, Resource Utilization, Game Theory, Fuzzy Logic, Bayesian Learning, Artificial Neural Network

INTRODUCTION

The development of technology has resulted in profound utilization of cloud computing in the 21st century as a model for on-demand internet based computing. This is mainly due to its support for features like scalability, multi-tenancy and parallel computations using the virtualization technique. Among all the benefits cloud offers there is always involvement of complexities and the threats during the provisioning of the virtual machines (resource). The varied forms of services offered by cloud would pave the way for hidden complexities which need to be handled appropriately by the service providers.

The factors generally considered during cloud provisioning are makespan, response time, power/energy consumption, cost, resource utilization and the load balancing. Among these we have focused more on the response time, power consumption and resource utilization by way of load

balancing. Load balancing is a phrase for workload distributions across multiple computing resources [1] such as servers, a cluster, networks, disk drives etc. It seeks to acquire resource usage optimization, increased throughput and improved performance along with eliminating the possibilities of overburden of the resources. Load balancing applied to multiple components would result in enhanced reliability through redundancy.

Load balancing could be performed statically or dynamically. Static load balancers does not use current state of the system [2] and are not pre-emptive, hence are less preferred, but dynamic load balancers use current state of the system and permit pre-emption by allowing the processes to move from over-utilized to under-utilized systems. It could be handled at sever level or the virtual machine level. We have considered dynamically balancing the load at the server level for our experimentation purposes.

The main problem with load balancing in cloud computing lies with resource utilization and thereby power consumption and performance. Most of the loads balancing strategies concentrate more on distributing the load evenly across the servers so that the response time is faster. But, they have not concentrated much upon the power consumption and other effects like cost based on it. Due to lack of consideration on these, providers would be required to spend more on resource provisioning thereby transferring the burden on to the customers. This results in reduction of market for the services as well as lesser ROI (Return on Investment) for the providers.

The ability of the load balancers to maintain resource utilization to a balanced level across the servers in the cloud datacenters can reduce the amount of energy consumption by avoiding overheating [3] of the nodes/servers. Energy consumption reduction would lead to reduced carbon emissions thereby supporting green computing. Increased utilization of the same resource without load balancing may result in failure of the resource (servers) thereby creating more problems to the providers from the perspective of the environment pollution due to carbon impact as well as the TCO (Total Cost of Ownership). There is also pressure from the government towards green computing initiatives,

Passive Disclosure of Hidden Traffic Patterns in Ad-Hoc Networks

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Abstract-Mobile and Ad-hoc Networks (MANETs) are “self-configuring”, “infrastructure-less” network arrangement of wireless functionality of phones. All the devices that together form MANETs is permitted to move in all possible routes, thereby changing its link associations with various devices in a significant part of the time. Each nodes or hubs must forward activity immaterial to its own utilization and subsequently be a switch. MANETs were initially built for military strategic situations, where it was expected as secure systems. This paper demonstrates that MANETs are liable under “passive statistical traffic analysis attack”. With the assistance of a framework called “Statistical Traffic Pattern discovery System”-STARS. The current proposal displays how to discover the correspondence communication patterns without decoding packets that are captured by the attacking system-STARS. The research work could be done to reveal the hidden traffic in a MANET correspondence framework.

1. Introduction

STARS is considered as an attacking software system to show how secure the Ad-Hoc systems are. Principle goal is that, the venture can be deviated to the advertising field to sense the Ad-Hoc systems, utilizing the measurements being detected, it is conceivable to decide system clients similar to number of people groups utilizing a specific site.

The objectives are:

- To exhibit how to find the correspondence designs without unscrambling the captured information.
- To perform traffic investigation taking into account statistical attributes of captured crude traffic.
- Achieving good precision in unveiling the hidden patterns by finding the sources, destinations and “end-to-end” correspondence relations.
- Derive the source/destination probability dissemination, developing “point-to-point traffic matrices” utilizing the “time-slicing” technique, and afterward infer the end-to-end activity with an arrangement of traffic-filtering rules.
- To find sensitive data from the measurable attributes of the system activity, the traffic volume as an example.
- Evaluate the execution as far as normal “false-positive rate” and “false-negative rate”.

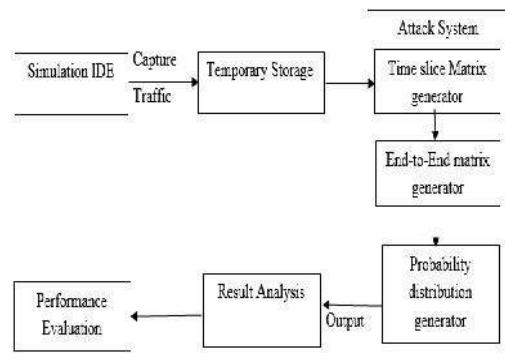


Figure 1.1: Architecture diagram of STARS.

a) Simulation IDE

The simulation IDE takes network traffic from Google earth. Using the network traffic it will simulate all possible communication between two different nodes. Final output of this module is a pair of source_id and destination_id for each time slice.

b) Temporary Storage

The captured traffic is stored in a file as a temporary storage. This data is used as the input to attack system.

c) Attack System

Attack system includes 3 modules to perform traffic analysis in passive way, they are

Smart Car Parking System

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Abstract—This paper presents the novel idea of developing the android application ‘Smart Car Parking System’ using Java and Android SDK. Android allows the users to experience the best service quality, and allow developers get a more open level for more convenient software developing. The application enables users to find the status of a particular parking area. Users usually wander around in search of parking slots thus leading to wastage of time. ‘Smart car parking system’ has an online website that enables the admin to monitor the parking slots and a mobile application which helps the users to find the status of particular slots of a parking area. It also enables the users to make cashless payment. The admin once registered, will have a login which directs him to the webpage that includes information regarding the current status of slots, which user has parked the car, users login and logout time, offer details etc. The admin can also provide offers to users and change the price of the slots. The user should login using his registered email address and the password. On successful login he can view the slot details, add his account details for making payments and recharge his account.

Keywords—IR Sensors, RFID

I. INTRODUCTION

Smart car parking system enables user to find the free slots and park the cars using an android app. It also facilitates the admin to gather various information about the user as well as the slots.

Car parking application is used to remotely obtain information of the number of slots free and about the ones that are occupied. The sensors sense the arrival of the vehicles. This sensor data is collected and stored in the server. The mobile application displays the information about the slots based on the server data.

IR sensors- Infrared sensors to detect the presence of the vehicle. RFID reader is used to fetch the RFID number assigned to the user using RFID card.

II. RELATED WORK

A survey of the Existing System shows an intelligent car parking services which is cloud-based, in smart cities as an important application of Internet of Things (IoT). It is used to distinguish between various parking slots and provide an available car parking slot based on different business applications. Though the system helps in locating parking slots, there is no provision for cashless payment.

The proposed system is an android application to find the available slots of a parking area for registered users. The website enables the admin to monitor the parking area, provide offers to users. The user can make online payments when he leaves the parking areas, based on the duration for which the particular slot was used by him. The benefits of the system is customer satisfaction, easy to use, secure online payment transactions, time-efficient.

III. PROPOSED WORK

The main aim of this project is to develop a system that would provide us information about number of occupied slots and free slots and display it using mobile application. The product uses IR sensors to detect if the car is parked in a particular slot and it updates this information in the server. The mobile application then retrieves the data from the server and presents it to the user. If the slot is unoccupied it is indicated as blue otherwise as red. RFID card keeps track of the duration of time the car has occupied on particular slot from its entry to its exit. This stored information is used for payment process.

There are three layers in Architectural Design namely:

Presentation layer, Business layer and Access layer.

Presentation layer

The front end of the system is in the presentation layer. The presentation layer interacts with the user, transforming the user activity into request and passes back to the business layer. On receiving the response from Access layer, it displays the result in appropriate form to the user.

Policy for Resource Allocation in Cloud Computing

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Abstract On-demand services such as resources, platform, infrastructure etc. can be provided to the users by using cloud computing environment, which in turn uses virtualization to provide the virtual copies of resources so that depending on users need, they can adjust the resources. In the proposed method, Hungarian algorithm is used to maintain load balance in the VM and Virtual machine allocation policy is used to improve the resource utilization by considering MIPS value and PE. Processing element value of host is used to decide host in which the VM should be created but if two or more hosts have same value the decision is taken based on MIPS value. The results obtained after simulations clearly portrays that proposed mechanism performs better than the considered existing system.

Keywords Virtualization, Hungarian algorithm, Virtual machine allocation policy algorithm, PE

1. Introduction

Cloud computing is used everywhere in the modern world. Benefits of Cloud computing such as scalability, processing speed, on-demand service, cost etc. makes it more popular along with that virtualization technique makes it more reliable, location independent to the user. Using virtualization we can increase/decrease the cloud capacity by providing virtual copies. We have many providers for cloud environment in that some are free/trial versions.

Now a days applications, services uses cloud environment as computing system, database and servers to complete their requirement. Since we can rent cloud system for days/months/years to complete their jobs many companies, developers are using this since it will avoid initial investment and overhead of maintenance. Variety of services are provided like SaaS, PaaS, IaaS but we focus on IaaS type of services.

There are different parameters, conditions which we need to take care in cloud computing to get optimized result. So in the proposed methods we take care of Load balancing and Resource utilization. Dynamically load is balanced by using Hungarian algorithm and it also reduces the time required for execution. Virtual machine allocation policy is used to improve resource utilization. In proposed methods we find assignments for task to cloudlets by using Hungarian algorithm and cloudlets to host by using Virtual machine allocation method.

Proposed methods are compared using CloudSim simulator tool which gives an idea of how this project works

in real environment. So using this tool different possibilities are checked for the proposed methods which proves that proposed method is more efficient than existing method.

Rest of the paper is organized as follows: Section 2 presents the literature survey, Section 3 describes the problem statement, Section4 explains the proposed methods and finally Section5 tells about conclusion.

2. Literature Survey

Nagesh Hawanna, et al. have done research on resource utilization and load balancing by taking many attributes and SLA (service level agreement) to improve the utilization of resource and performance. Used Hungarian algorithm, virtual machine allocation technique to get mapped resource at less time. Results of existing system and proposed system are compared [1].

Weimei Lin, et al. [2] has explained allocation of resources and they have proposed mapping method. In Existing method suspension of the application is required so authors proposed a new approach that assigns vm only if host has the required minimum resources. They proposed threshold-based dynamic resource allocation scheme to allocate resources depending on load changes (dynamic way). This helps in the resource utilization and to decrease the cost.

C. Valliyammai, et al [3] have discussed about resource allocation policies and classifications. Authors have mentioned that fluctuating workload needs to be managed. Challenges and issues in allocation of resources are discussed. Different allocation systems of cloud and the constraints, methodology used are compared.

Swathi Saxena, et al. [4] proposed a market-driven auction technique for demand based allocation of resources and based on payment capability the user is identified. Authors compared proposed technique with VCG auction mechanism

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Protection of Password using Distributed Clustered Division and Encryption

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Abstract This paper presents a secure technique for the password protection which make use of distributed database. Security to the password has become a crucial problem in this generation as more and more attacks are focused on the password to get access to user's confidential data. Here the password is split into parts and is stored in different database instead of storing the entire password string in one database. The password is stored after encryption, the encryption algorithm used is itself improvised by using a pseudorandom key generator. The encrypted string is split into three, the split is reversed and stored into separate databases. The paper shows the comparison of the improved algorithm made use. The technique of distributed storing enhances the security by making it difficult for the hacker to get the user password easily.

Keywords Distributed partitioning, Encryption, Password, Improved AES algorithm, Cryptography

1. Introduction

Security of the data is one big issue in the development of the communication network. The data stored in the server database and propagated in the network might contain individual privacy information. The password which the user uses in the day to day life is mostly compromised to the hackers trap. Password is being most common authentication technique which provides the access to system resources. Password is the simplest form of authentication technique used, the probability of cracking the password using different combinations is considerably high. Password encryption provides security to a considerable level.

In this a technique is proposed to increase the protection of the user password from unauthorised users. The password of the user is stored in the server database using distributed partitioning of the data where the parts of user password is stored in different database. This is done focusing on the security of the data so that it does not be prone to attackers easily. Earlier the password is stored as it is in plain text format into the server database. The strength of the password does not give any security to the user account. The password constituting of large complex string or a weak password is all the same for the attacker if he gets access to the database where the password is stored.

Along with partitioning of the user password, it is encrypted using an enhanced AES (Advanced Encryption

Standard) algorithm which gives a stronger encrypted cipher text. This enhanced algorithm is known as improvised AES algorithm. Encryption is that secret key and plaintext get through complex arithmetical operation to form cryptograph [11]. All plaintext are hidden in cryptograph. Plaintext is the data which is protected. Secret key is generated through encryption algorithm. Cryptograph is transmitted to receiver through channel after encryption success. Decryption is that receiver computes plaintext using cryptograph and secret key. A safe encryption algorithm can be described as follows. Although attacker captures parts of cryptograph or all cryptograph, attacker cannot restore plaintext in limited time and limited resource [12].

2. Related Work

Clustering of the data based on the frequency of accessing the information minimizes and enhances the efficiency of the database. Clustering technique overcome the drawbacks of the database systems which are centralized and the size of the information stored each day increases drastically [1].

An improved AES (Advanced Encryption Standard) algorithm which gives an improved encryption algorithm to increase the security. There were lots of security issues with the AES encryption since it make use of the secret which is public. The new encryption algorithm is based on chaos theory which makes use of a pseudorandom key instead of previously used public key in AES encryption [2].

An improvised approach for plain text password encryption in the server's database. One of the major aspect of password protection issue is to secure it by means of encryption process. A new approach for improvising the scheme of password encryption is using the process of

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QUALITY OF SERVICE FOR MANET BASED SMART CITIES

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Abstract— In the past decade's digital revolution has caused major breakthroughs in integrated communication technologies field and has changed the way people work, communicate and live. Cities are moving from static infrastructure and buildings to dynamic smart ecosystems known as smart cities. Smart city refers to urban development in various domains of the city like transport, healthcare, home, buildings etc. by using various technology and communication services. As the systems in smart city are heterogeneous, highly mobile, pass large number of messages, MANETS have specific characteristics that can satisfy these requirements. Smart city applications require high reliability, bandwidth, delay and loss of packets should be reduced. Therefore, providing Quality of service (QoS) in such applications is vital. This paper contains a literature review on QoS and network architecture for smart cities, challenges in providing QoS for applications like healthcare.

Keywords— Quality of Service, MANET, Smart Cities.

I. INTRODUCTION

Smart city refers to the urban development vision to Integrated Communication Technology and Internet of Things (Iota) and multiple information in a secure way to manage city's assets which includes transport, hospital, waste management, water management etc. and other communication services. Idea behind building the smart city is for improving the quality of life by making use of urban technologies for improving the efficiency of services and fulfill citizen's needs. By Integrating sensors with real time monitoring, the data are collected from the surrounding, processed and analyzed. As sensors and actuators have low cost, it is used in smart cities. Information and communication technology is used for reducing the resource consumption, reducing cost, to enhance quality, interactivity between services and performance. For e.g. in a health sector, communication technologies are made use to connect the location of the patient, medication and health statistics and provide it to the patient's health care professional.

Some of the customized services in smart city are in case of vehicle, by combing the sensor data driver health parameters on driving conditions is measured. By combining the health parameters such as heart rate and blood pressure with the vehicle status will help the driver to measure the real time health condition and will help to create safe environment for the drivers.

In achieving the smart city concept communication medium plays an important role. Existing communication devices used in smart city are LTE, Wi-Max, Wi-Fi, CATV and satellite medium. The smart city operates in the complex urban environment consisting of several complex infrastructures, technology, human behavior, political and social structures. By deploying the low cost, wireless sensor

networks (WSNs) and mobile ad hoc networks (MANETs) in smart environments have lot of new opportunities. MANET and WSN convergence leads to the development of new IOT communication platform with a potential of applications in various domains. As the mobility of the nodes should be supported in smart cities, MANETS are used in smart cities. In MANET, routes are configured repeatedly and this work is done by all the nodes in the network and it does not have a central controller. MANETS have no infrastructure support, the nodes are configured automatically, and they are fault tolerant, and support mobile devices. All these characteristics can be used for building a MANET based smart city. Providing real time data transmission is another challenging task in MANET. Integrated environments with different types of services need QoS to provide different resources availability depending on their relative importance. Since the smart cities include humans, context information should be considered e.g. location. In health care applications where the quality of life is involved, delay, loss of packets, and bandwidth should be reduced. Context aware QoS support should be given for smart cities.

There are a lot of research work going on regarding the issues in providing the QoS in smart cities and various architectures are proposed. Some of the issues are continuous changes in network topology, area covered, mobility, end to end delay etc. A new approach called "human as a sensor" is presented where humans are used to collect, analyze and communicate the data.

The literature review in this paper is about various QoS requirements for the smart city applications and the solutions, network architectures for smart city, issues in providing QoS in MANETS, different routing protocols in smart city. The detailed review is presented in section 2 and conclusion in section 3.

Search Buddy: A Search Engine for Physical Objects

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Abstract In our day to day activities, we tend to lose or misplace various items and end up wasting valuable time searching them. Most of them include wallets, keys, mobile phones and other useful items. In this case, the search relies on our ability to remember their previous location or searching in random places. Hence the search could easily result in failure to locate the lost item. In terms of searching information online, locating physical objects is rarely supported by technology. Hence Search Buddy acts as a search engine for physical objects and helps to locate lost items with more accuracy than a manual search. In Search Buddy, a Search Kit contains the main search module which consists of the PIC microcontroller, the HM-10 module and Wi-Fi module. This can then be setup in a home with minimal configuration. The items to be searched are attached with a beacon module which gives the relative distance with respect to the HM-10 module. Improvement in Bluetooth technology can fetch accurate results and miniaturization of item beacon modules could be done in order to facilitate direct integration into physical objects.

Keywords RFID tags, HM-10 Module, Beacon, RFID Reader, Wireless communication

1. Introduction

Searching for lost keys, wallets or mobile phones is a common nuisance. Compared to digital information, search support for physical objects is very limited. An average person misplaces up to nine items per week and spends about 15 minutes per day searching them. Mobile phones, keys, and sunglasses are among the most frequently lost items [1]. Losing those items can waste a lot of time, money, and cause headaches. While searching for digital information is a well-supported everyday task, searching for common physical objects is not supported by current technology. Mobile phone trackers enable remote localization of lost phones with GPS, WiFi, or based on cell of origin. However, such approaches are not applicable for smaller objects, such as keys or wallets, and have difficulties with objects indoors.

Previously proposed systems for physical object search require the user's presence and active participation in search.

The objects are equipped with low-power optical sensors; a special flashlight to trigger audio-visual feedback of objects. While highly energy efficient due to the use of low power sensors, objects must be in the user's visual range.

Further sections of this paper are related work in section 2, System architecture in section 3, technology used covered in section 4, implementation under section 5, and experimental results and analysis that covers a detailed explanation of the proposed system in section 6. Last section of the paper gives

conclusion and future work of Search Buddy.

2. Related Work

In the paper proposed by Pascal Knierim, et al. [1] localization of Stuff follows the introduced layered search model. Once the desired Stuff could not be found with RFID localization, relative localization with ZigBee is triggered. The server sends a message to the Stuff via SmartFurniture. The Stuff sends beacons as broadcast messages. Each SmartFurniture that receives the beacons measures received signal strength (RSSI) for all its antennas. These values are used to calculate the direction of the Stuff. Direction estimation and RSSI values are reported to the server's result queue. Note that the signal strength is interpreted as a distance metric in this model, which can be problematic due to variations caused by external influences. To compensate for this, values are checked for consistency and a weighting factor can be included reflecting the number of received beacons. The resulting position is returned as the search result together with a stored image of the searched object.

Search Buddy is a search engine, for finding misplaced physical objects in common indoor environments, like homes or offices. It offers a typical search engine interface to let users search for lost objects. The Search Kit contains the main search module which consists of the PIC microcontroller, the HM-10 module, RFID reader and Wi-Fi module. This can then be setup in a home with minimal configuration.

Physical objects are made searchable by attaching or integrating a beacon module to the objects which is detected by the HM-10 module. RFID is a wireless communication

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Smart Key: Secure Door Lock System using NFC Enabled Smartphone

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Abstract Smartphones have become very popular and versatile devices. An emerging trend is the integration of smart phones into security systems and applications, particularly access control systems to unlock doors. Smartphone based security solutions promise to greatly enhance the user's experience by providing advanced features far beyond the conventional dedicated tokens/transponders. The generic security architecture protects the electronic access tokens on the smartphone and provides advanced features such as context-aware access policies, remote issuing, and revocation of access rights and their delegation to other users. Various approaches to instantiating the security architecture based on different hardware-based trusted execution environments and elaborate on their security properties are discussed here. The door lock system is implemented based on the latest Android-based NFC-enabled smartphone.

Keywords Nearfield Communication, Mobile Security, Access Control

1. Introduction

Today, smartphones are high-performance platforms providing a wide range of features and have become an integral part of daily life. The increasing computing and storage capabilities, the vast number and variety of apps available on app stores and new communication interfaces, such as Near Field Communication (NFC), provide many deployment possibilities for smartphones, including electronic ticketing, payment and access control. In this context, an emerging trend is the integration of smartphones into modern automotive systems and applications such as access control to lock and unlock and also configure the system. In particular, the NFC interface is well-suited for such applications due to its short nominal communication range (of a few centimeters) providing basic assurance of the user's physical proximity. In this paper, the focus is on smartphone-based NFC-enabled door lock systems. An electronic door lock is an anti-theft device that prevents an unknown person from entering the house unless the corresponding access token is (physically) present and authenticated. Currently, this access token is a transponder (i.e., an NFC chip) embedded into the NFC smartphone.

They do not require users to obtain a physical transponder but allow them to use their smartphone to remotely obtain electronic door lock access. Moreover, access rights can be delegated to other users, revoked or bound to specific

policies. Despite the mentioned advantages for users, the core challenge concerns the security aspects of smartphone based door lock systems.

Smartphones are complex devices and appealing targets of attacks (e.g., by malware), especially when they are used in security-critical applications. The traditional locks used in practice are closed and proprietary systems and suffer from various security vulnerabilities. The reasons are conceptual protocol design flaws as well as the deployment of insecure or weak cryptographic schemes. On the other hand, a commercial smartphone-based NFC enabled door lock systems have been introduced recently, but without providing technical details or information on their security properties.

Goal and contribution: An open smartphone-based lock system architecture and the underlying security framework, which provides enhanced functional and security features and overcomes the security issues of the conventional door lock systems. In particular, the contribution is as follows:

Framework for smartphone-based door lock systems: Framework considers the functional and security requirements on the protocols and the system architecture of a smartphone based solution under realistic adversary models.

Evaluation of existing security hardware: This paper evaluates and discuss various instantiations of security architecture using different approaches to establishing trusted execution environments on smartphones. It discusses which security guarantees can be provided by these instantiations, under which assumptions, and how some of these assumptions can be fulfilled by leveraging the features of security hardware currently available on recent

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Sous Chef - A Smart Way to Search for Recipes

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Abstract Sous Chef is an android application which follows a different approach to searching for recipes. It is a unique reverse recipe search engine which searches for recipes based on the ingredients. In addition to its unique recipe searching feature, the mobile application also has various other features like ratings and reviews for recipes, a favorite list of recipes for faster access and also the regular way of directly searching for recipes. The application displays a list of recipes by prioritizing the recipes that make efficient use of the ingredients.

Keywords Android application, Unique reverse recipe search engine, Searches for recipes based on ingredients

1. Introduction

A **Sous-Chef** is a chef who is "the second in command in a kitchen; the person ranking next after the head chef. Hence, this application acts as your assistant helping you to choose the best recipe.

The android application Sous Chef is used to make it easier for the users to search for recipes. The application will allow the users to enter a list of ingredients and a list of recipes that can be cooked with those ingredients will be displayed. This application will be of great help to amateur chefs. The main advantage of our android application is that it saves the user from going to a shop and buying a lot of ingredients for just a single recipe. Instead, he or she could just check for the recipes that can be cooked with ingredients that are currently available at home.

When people search for recipes, they choose a recipe, then look at its ingredients and go grocery shopping for those ingredients. This takes up a lot of time and also a lot of money is spent. There are so many dishes you could cook with the ingredients you have at home. What this application does is, it searches for the recipes based on the ingredients that people currently have in their homes.

2. Related Work

A number of applications or websites provide a classical way of searching for recipes [1] where the user enters the name or the keyword of the recipe he/she wants to cook and the application or the website will display details of that recipe. The problem here is that, the user may not have all the ingredients for that recipe. And he or she may have to go

grocery shopping to buy all those ingredients. This is both a waste of time and money. Sous Chef, however, asks the users to select the ingredients they have in their kitchen and it will display all the recipes that can be cooked with those ingredients eliminating the need to go grocery shopping and wasting money.

3. System Architecture

The system architecture comprises of 3 main components: The mobile application, the web server and the database.

The mobile application is an application running on an android device with which the user directly interacts. The touch screen interface of the device makes the interaction with the mobile device much easier and user friendly. The mobile application consists of mainly the user interface design, some application logic. It does not however store any data about recipes or ingredients.

The Web Server maintains all the details about recipes and ingredients. It is also used to add new recipes and ingredients and also to update existing recipes and ingredients. The adding and updating of recipes is done by the system admin.

4. Modules

The application consists of various modules. Three of the modules are: Login module, Search module and Result module.

Login module is used for logging into the application. Users login username and corresponding password is checked. If they do not match, then login is not authorized. The user may then register by entering the necessary details about the user. The username is unique for each user.

The search module is used to search for recipes and then match with the best possible recipes based on the ingredients selected. Recipes that are missing 1 or 2 ingredients are also matched to provide a more wider range of output.

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Student Authentication and Verification System using Barcode Scanner

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Abstract In this paper, we are introducing a web application to enable students to access the college facilities through a barcode reader. In today's world, technology is growing at a very fast pace and transformation has become a necessity in every field to make productive use of technology. Barcode technology is a replacement for the traditional keyboard data entry. This is a web based application which integrates all the services of the library and central computer center of the college, which also enable the students to access the library and central computer center in most advanced way. This application aims at reducing the manual work and eases the work of the student in the most efficient way. This application reduces paper work and minimizes the work pressure of the library staff and central computer center management.

Keywords Barcode scanner, Central computer center (CCC), ID card, Library

1. Introduction

College provides various facilities like access to the central computer center and library for the student. At Present students maintain separate cards namely the student ID card for the central computer center and a library card for the library facility. Also the entries like in-time and out-time for the library and central computer center are manually entered. This web application is developed in view to eliminate use of multiple cards to access college facilities like central computer center and library and also to minimize the manual work. Barcode Based Student Authentication and Verification System is an application which utilizes a barcode scanner to record and maintain the arrival and departure time of the students to the library and central computer center. This application has a user friendly interface and the student is only allowed to scan the card and not permitted to use the application. The main hardware that is to be used is the barcode scanner. This barcode scanner is used in order to read a barcode.

A Barcode is a machine readable representation of information in a visual format. A barcode consists of a series of parallel, adjacent bars and spaces. The bars and spaces are designed with different widths and consist of numbers, characters and symbols such as dot, colon and others. Different combinations of these alphanumeric characters are used to represent information. The success of barcode technology has been constantly improving in order to

accommodate more information in the minimum possible space. Today barcodes are widely used on books and at retail stores in order to keep track of the products available and easy checkout of the products. The barcodes are normally read using scanners using laser beams or cameras. Generally, barcodes are symbols shaped in the form of rectangles which consist of thin or thick parallel lines parallel to each other. Barcodes provide means for automatic rapid data input into the computer. Since the last decade, barcodes are being used in many areas such as market products and electronic devices. The lines on barcodes contain the reference number of the product. There are several types of barcode that being used within the industrial field nowadays. A barcode symbology defines the technical details of a particular type of barcode which includes width of bars, character set, method of encoding and checksum specifications. Barcode types can be classified into four categories namely numeric-only barcodes, alpha-numeric barcodes, 2D barcode and industry standard for barcode and labels. There are three basic types of barcode readers: fixed, portable batch, and portable RF. Fixed readers remain attached to their computer and transmit one data item along with data time as the data is scanned. Portable batch readers are battery operated and store data in to memory for later batch transfer to a computer. Some advanced portable readers can operate in non- portable mode too, often eliminating the need for a separate fixed reader.

A student can access the both facilities only through a single card which is a college ID card. She/he can scan his /her card which is embedded with a unique barcode. Barcode Based Student Authentication and Verification System is a web application which utilizes barcode scanner to record and maintain the arrival and departure of the students to the library and central computer center. The main hardware that

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Teledroid Anti-Theft Application for Android Devices

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Abstract Lots of applications are developed to track a Smart Phone, but still it is a major concern. If ever the phone is lost, user has to manually report to the customer care to block the IMSI number of the lost phone. This work is reduced by our application. Our Android Application is deployed with initial registration of user mobile number, alternative mobile number, and passcode and email id. This application which runs in the background can be able to track the current location of the device. If the thief changes the SIM card, immediately SIM details, latitude and longitude of the location are sent to the alternative phone number of the original user through SMS. We can retrieve the contacts and critical files from the lost phone. We can retrieve important contacts by SMS and entire contact list through mail. We can also retrieve the critical files in the lost phone by using file transfer facility that is available in the application. Website provides location history of the phone and we can download the requested files.

Keywords Location tracking, Android Smart Phone, SMS, Email

1. Introduction

In today's world, cell phones play an important role in everyone's life. The mobile OS used by modern smart phones include Android, Blackberry, Symbian which are the world's best OS. There are many differences between their features and performance. It provides multiple options like voice and video conversation, GPS tracking system and internet usage. Radio signals are constantly been broadcasted by cell phones and hence can trace a lost mobile phone. All cell phones constantly send signals to its nearest towers hence it is been possible to track lost phone accurately.

Anti-Theft application is a project which helps to track the location of smart phones. This application usually runs in the background. It consists of Android Client application which automatically sends SMS to alternate number when SIM card is changed. Position Tracker works on GPS (Global Positioning System) and GPRS (General Packet Radio Service) [1]. When SIM flipped, the application will fetch latitude and longitude from satellite and send it as SMS. Owner can send a message to the application in the predefined format. Application provides the requested services via SMS or Email.

Teledroid is an Android based software which helps us do some specific operations on a cell phone which is in a remote location that is accessed through a different user's cell phone; operations include retrieving contacts, retrieving files and tracking phone in case the user loses the phone. Owner can send a message to the application in the predefined format.

Application provides the requested services via SMS or Email.

Location history of the lost phone and meta data of the requested file along with the downloading of the required file can be made available through the website.

2. Background

There are already several applications in the market that offer tracking systems and anti theft applications to detect non-authorized SIM cards. Most of these applications provide dedicated solutions using tracking methods to monitor a mobile device [2].

The application can be installed only on mobile phones with Android operating system. The existing systems which are available in the market are not protected by password, so the application can be uninstalled by the thief. This drawback is overcome by our proposed system in which we configure our application with a password during the installation of an application.

3. Proposed System

The proposed system tracks the location of the mobile phone using GPS. This application can be used even if the mobile is present in the moving vehicle. It can be installed on the mobile phones with the Google android operating system. Upon the SIM change by the thief, notification is sent to the pre-specified mobile number.

System Architecture

The architecture of the "Anti-theft application for Android devices" is as shown in figure 1. Upon SIM change by the

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TOM(TOuch Mouse)

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Abstract This In today's world touchscreen technology is playing a vital role in our lives and implementing such a technology in almost everything we use is very important. This paper talks about the application TOM-TOuch Mouse, which is used to give the user a touchscreen experience on any projected surface. TOM eases the usage of the projected surface by giving a touchscreen experience. The user needn't keep moving to the computer that is connected to the projector to navigate or perform some task, instead he can use the projected surface itself as he would use the regular computer to perform required task. Unlike other solutions to convert projectors to touchscreen, TOM is freely available; since there is no usage of any hardware. TOM can be used by anyone without any technical knowledge and therefore can be used even in rural areas to provide a smooth and more interesting urban outlook to education or entertainment.

Keywords Touchscreen, Projector, Education, Mouse

1. Introduction

The touchscreen technology has now become an inherent part of our day to day lives. Need for large touchscreen surfaces is increasing by the day. The gap between the real and virtual world is filled by this technology. Large touchscreen technologies today are in very high demand, to ease the interaction between the user and the computer. Projected surfaces are used in almost all fields such as education, hospitals and entertainment. Hence, the development of projected surfaces to be converted to touch screen surfaces has made it much easier to interact with the projected surfaces. The necessity to move to the PC, every time the user navigates through the computer or performs a particular task, is completely eliminated with this kind of technology.

The existing technologies like IWB (Interactive White Boards) are extremely expensive and can be used only by well-established organizations. Using IR sensors (Wii remote) application is also relatively expensive because of the use of hardware. This is where TOM(TOuch Mouse) comes into existence. TOM is an application that is used to convert any projected surface to a touchscreen surface. Using TOM the user can get the look and feel of touchscreen on any projected surface. TOM can be used on any 64 bit system which has an inbuilt camera or support USB camera. Since it is designed without the usage of any kind of hardware it is completely free. It is also designed

with a very simple user interface so that even naive and inexperienced users can use this software. TOM was developed keeping in mind the common man, who cannot afford this kind of existing technology. Installing TOM on all systems in educational institutions enhances the quality of education, making classrooms more interactive and interesting, also giving a very practical approach to usage of computers, thereby instilling interests to pursue careers in the field of technology in the younger generation. Apart from this TOM can be used in offices, shopping centers, hospitals and entertainment industry to make work much easier and convey information in much easier and interactive way.

2. Background

Touchscreen technology allows users to interact directly with the screen without the use of any mouse, touchpad or any other such devices. This technology is commonly used in PCs, Tablets, gaming consoles and other such devices. Touchscreen technology is very popular because it makes the UI more effective and easy to use. It completely eliminates the usage of external hardware apart from the system that they are using. [2]

Need for large projected surfaces is increasing by the day. Therefore to satisfy this demand, existing touch screen projected surfaces like An Interactive Infrared Sensor Based Multi-Touch Pane [1], Direct control of the computer through electrodes placed around the eyes [3], Control units for operation of computers by severely physically handicapped persons [4] were created.

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Segmentation of Breast Thermogram Images for the Detection of Breast Cancer – A Projection Profile Approach

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Abstract—Breast Thermography is an emerging medical imaging tool, used for early detection of breast cancer. The growing tumor in the breast will cause the occurrence of some asymmetric heat patterns in the left and right breast. Asymmetry analysis of left and right breast is used for detecting the breast cancer from the breast thermogram images. This paper presents a method for segmenting the left and right breast from breast thermogram images using Projection Profile Approach. Horizontal Projection Profile (HPP) method is used for locating the lower and upper borders of the breast by detecting the inframammary fold and axilla curves of the breast respectively. Vertical Projection Profile (VPP) method is used for locating the left and right borders of the breast thermogram image, which detects the parabolic shape of the breast. The results of segmentation are satisfactory. Generalization of this method can be done for various types of breast thermogram images by standardizing the height, background and removal of the noise present in the image.

Index Terms—horizontal projection profile, vertical projection profile, edge detection, breast cancer, computer aided detection, Sobel operator, Canny operator, inframammary fold, asymmetry analysis

I. INTRODUCTION

Breast cancer is the most common cancer in women all over the India. Population Based Cancer Registry (PBCR) report says that breast cancer accounts for 25% to 31% of all cancers in women in Indian cities. The breast cancer mortality rate of women correlates with the stage of the breast cancer when they are diagnosed. When breast cancer is diagnosed in its early stage and treated, the women have a greater chance of survival. Medical imaging techniques such as Mammography, Ultrasound and Magnetic Resonance Imaging, can detect early signs

of breast cancer. Even though Mammography is known to be the gold method for detecting breast cancer, but its results are not effective for denser breast. It uses X-Ray radiation to form the images of the breast area. Mammographic procedure is painful for the patient due to the compression of the breast. So in search of other imaging techniques thermography has emerged as a potential method for detection of abnormalities in the breast. All bodies with a temperature above absolute zero emit infrared radiation. Thermal cameras can convert this infrared radiation into electrical signals, and present them as a thermal image. Breast thermography is based on the observation that malignant breast tumors emit greater heat than healthy breast due to higher metabolic activity of cancerous cells and angiogenesis i.e. Cancer tumor starving for nutrients produces a chemical that dilates the blood vessels [1]. Therefore, the cancerous tissue is highlighted and easily differentiated from a normal tissue in a thermogram. Thermogram can give highly dynamic information about tumors. In this method, in addition to normal tumors, very small tumors are also easily and very quickly detected [2]. Breast thermography is a non invasive, non radiating, passive, fast, painless, low cost, risk free imaging method and it is suitable for women of all ages, including pregnant and nursing women, with all sizes of breast, with or without breast implants, fibrocystic breasts and dense breast tissue.

To improve the accuracy of diagnosis of breast cancer, Computer-aided diagnosis/detection(CAD) techniques are used. The major method used by the physician to detect the breast abnormalities present in the thermogram image is by visual inspection of asymmetries in the left and right breast thermogram images. It is impossible to have a breast tumor growing symmetrically in the left and right breast. Due to the limitations of human visual system, it is not possible to detect all kinds of abnormalities present in the breast thermogram images. So there is a need to

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Performance Comparison of IEEE 802.11n HT PHY Using OSTBC with ZF Decoding

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Abstract—Wireless Local Area Networks are very popular among the users today due to the speed on offer, available security mechanisms and the mobility it provides. IEEE 802.11 set of standards for WLAN have undergone multiple revisions to support higher data rates and different operational frequency bands. IEEE802.11n High Throughput Physical layer device (HT-PHY) is an Orthogonal Frequency Division Multiplexing (OFDM) based Multiple-Input Multiple-Output (MIMO) PHY capable of supporting four spatial streams and data rates up to 600 Mb/s. Space-Time Block Coding (STBC) is a MIMO transmission strategy that exploits transmit diversity and provides high reliability. The design aspects of an HT-PHY with dual spatial streams operating at 20 MHz bandwidth supporting the modulation schemes of BPSK, QPSK and 16-QAM on a Field Programmable Gate array (FPGA) are discussed. Implementation of orthogonal space-time block codes (OSTBCs) for this two transmitter–two receiver system under Additive White Gaussian Noise (AWGN) channel and flat fading channel is performed. Alamouti code is employed for the STBC. Decoding is done using the Zero Forcing (ZF) algorithm.

Keywords: Alamouti Code, FPGA, HT-PHY, MIMO, OFDM, Rayleigh Flat Fading, STBC, Verilog, Xilinx, ZFD

I. INTRODUCTION

The IEEE802.11n HT-PHY is an OFDM based PHY designed to operate in 2.4 GHz and 5 GHz frequency bands. The subcarrier modulation schemes used are Binary Phase Shift Keying (BPSK), Quadrature-PSK (QPSK), 16-Quadrature Amplitude Modulation (16-QAM) and 64-QAM. The HT-PHY employs spatial diversity using multiple antennas to support data rates of up to 600 Mb/s. It supports up to 4×4 MIMO channel, in which each path from one transmit antenna to one receive antenna can be viewed as one signaling path. Space time coding combines *all* the copies of the received signal in an optimal way to extract as much information from each of them as possible.

The paper is organized as follows. Section II of the paper deals with the HT-PHY Design. Section III of the paper deals with the STBC that provides full rate diversity, the Alamouti code. Section IV deals with the system model used in the simulation.

This is followed by the results and analysis in section V. Finally section VI provides the conclusion.

II. HT-PHY DESIGN

A. System Specifications

The Specifications chosen for the design are listed below:

- 2X2 MIMO with support for 52 sub-carriers.
- 20 MHz Operating Bandwidth
- BCC with rate $\frac{1}{2}$ and $\frac{3}{4}$ as the FEC code
- Equal Modulation with BPSK, QPSK and 16-QAM as the modulation technique.

B. Block Diagram

The block diagram of the HT-PHY is in Fig. 1.

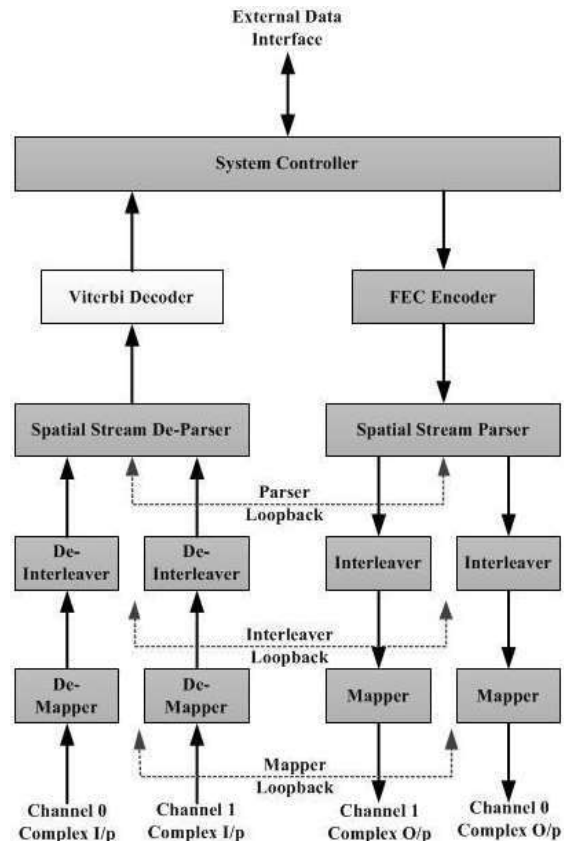


Fig. 1: 802.11n HT PHY Design Block Diagram

A PAPR Reduction Technique for OFDM Using Moving Average Filter

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Abstract - Orthogonal frequency division multiplexing (OFDM) is a widely used modulation scheme, due to its immunity towards frequency selective fading. But, due to its multicarrier nature, the scheme suffers from high Peak-to-Average Power Ratio (PAPR), which degrades the transmitter efficiency. In this paper, a simple filtering scheme has been proposed which will drastically reduce PAPR at the cost of no additional bandwidth requirements and with minimum computational complexity. Analytical result for the proposed scheme has been derived which is supported by simulations indicating a better PAPR performance as compared to the conventional OFDM scheme.

Keywords - Fading; Moving average filter; OFDM; PAPR.

I. INTRODUCTION

Orthogonal frequency division multiplexing (OFDM) is a multicarrier modulation scheme, which divides high data rate serial stream into a number of parallel streams lower data rate that are transmitted on different subcarriers which are orthogonal to each other. The main advantages of OFDM-based systems include robustness to frequency selective fading, high spectral efficiency due to overlapping subcarriers, low-complexity equalization, etc [1]. However, due to a large number of subcarriers, the OFDM signal owns a large dynamic signal range, which results in a very large Peak-to Average Power Ratio (PAPR). The system performance is degraded due to high PAPR, which introduces signal distortion when the dynamic range of transmitted signals is larger than the amplifier accommodation, resulting in an increase in Bit Error Rate (BER) of the system [2][3]. Hence the reduction of PAPR in OFDM and other such multicarrier schemes has been a key area of interest over the years and several schemes have been proposed. However, most of the schemes either introduce additional bandwidth

requirement [4]-[6] as they need to carry side information, thus reducing bandwidth efficiency or apply measures like clipping, peak windowing etc. which result in poor BER performance[7] [8].

In this paper a simple moving average filtering scheme has been proposed, which results in a considerable reduction in the PAPR as compared to conventional OFDM transmission scheme at the cost of negligible computational overhead and no additional bandwidth requirements.

II. BACKGROUND

OFDM distributes a high bit rate serial data over large number closely spaced orthogonal subcarriers, resulting in several parallel low bit rate channels. Here the serial data is first converted to N number of parallel streams. The N parallel data input symbols at any instant can be defined as $S[k]$, ($k=0,1,\dots,N-1$). Then, N point Inverse Discrete Fourier Transform (IDFT) $s[n]$, ($n=0,1,\dots,N-1$) of $S[k]$ is calculated. The output signal to be transmitted for one OFDM symbol can be written as

$$s[n] = \sum_{k=0}^{N-1} S[k] e^{j \frac{2\pi nk}{N}} \quad 0 \leq n \leq N-1 \quad (1)$$

The PAPR of such OFDM signal, is defined as

$$\text{PAPR} = \frac{\max |s[n]|^2}{E\{|s[n]|^2\}} \quad (2)$$

The theoretical maximum PAPR can be obtained by assuming an M-PSK modulation. For N subcarriers with unit power, i.e. subcarriers modulated such that $[k] = |S[k]| e^{j \frac{2\pi m}{N}}$, $|S[k]| = 1$, it results when all subcarriers add coherently. Its IDFT $s[n]$ is given by $s[n] = N \delta(n-m)$ [9]. The average power of the sequence is $P_{av} = N$

Interactive Voice Response Application for Colleges

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Abstract— Every institution requires automation of processes now-a-days. Interactive voice response system builds bridge between computer database and people by connecting a telephone network. The system enables parents to know their ward's academic details through telephone line that is provided by faculty members of the college. In the system developed the student details are related to their internal test marks, attendance, fees pending details and exam timetable. Compared to previous system the complexity of hardware integration is reduced as less hardware components are used in developing this system. This project is mainly based on IVRS and internet. When parent wants to know their ward's academic details, they can simply dial to a toll-free number that will be provided to them at the time of admission. Once the connection is established between telephone line and computer database, a computer generated voice instruction greets and directs the caller to enter the student registration number through their telephone keypad. After entering student registration number system directs the caller to enter the dual tone multi frequency (DTMF) signals as input through their telephone keypad and based on the given DTMF signals PC fetches appropriate data from the database, which is provided as response to the caller. The system is cost effective, highly efficient as it reduces clerical process, time consumption and enables easy way of handling documents. It also increases staff efficiency as the data can be analysed more easily and quickly than it can be done manually.

Keywords— IVRS, GSM, DTMF, arduino, PC, automation

I. INTRODUCTION

Automation is the process of performing tasks using machines or systems that were usually performed or controlled by the people. Interactive voice response (IVR) is a technology that acts as a bridge between people and computer database where people communicate with computer with the help of dual tone multi frequency (DTMF) signals that are given as input through their telephone keypad when connection is established[1][2][3]. Interactive voice response system (IVRS) is a phone innovation that empowers PC to recognize voice and DTMF tones using a normal phone call [1]. It enables user or caller to receive information or data

stored in database from anywhere at any time over a telephone line [1].

To understand the basic working of interactive voice response systems in college consider an example where student attends exam and his/her answer booklet will be evaluated by the faculty member. After evaluation marks are awarded that will be stored or uploaded into database by faculty member. When parent wants to know the performance of their ward in exam they can simply call to the toll-free number provided to them by the college. On the establishment of connection, a computer generated voice message greets the parent and directs to enter the student number and DTMF signals through their telephone keypad. Based on the given DTMF signal system fetches appropriate data from database that is delivered to the parent in the form of voice.

In the system “Interactive Voice Response Support Application for Colleges” a software is created that allows faculty members to enter all the required information such as marks, attendance, time table and fees details related to students will be gathered in database. The framework has the ability to expand staff efficiency, perform undertakings automatically and dissect information more quickly than it should be possible manually.

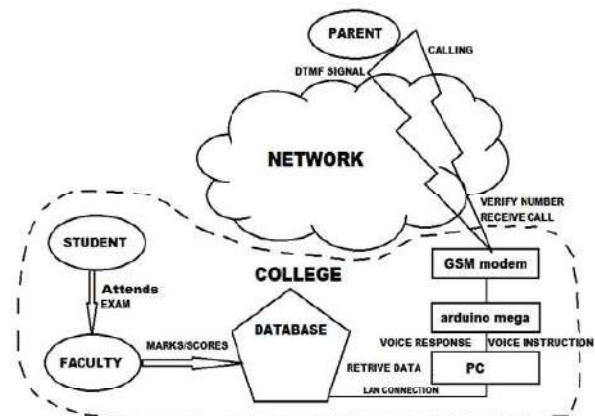


Fig.1 Basic working of IVRS system

II. LITERATURE SURVEY

In developing countries many educational institutions follow the traditional or ancient method or technique of

User Satisfaction-Based Resource Allocation in LTE-A



Jagadeesha R. Bhat and S. Anantha Kamath

Abstract The resource allocation issue in LTE-A is a challenge as it is a combinatorial optimization problem, involving several constraints. The resource blocks (RBs) can be scheduled to a user at every 1 ms, following the adaptive modulation coding (AMC) techniques. In this paper, we address the resource allocation problem for a unicast scenario (i) to maximize the number of satisfied users and (ii) to maximize the overall throughput by packet-level scheduling when the resources are limited. Both problems are NP-hard, and as a result, we proposed two heuristic algorithms that could meet the said objectives in polynomial time by adaptively selecting the RBs. The performance evaluation of the proposed algorithms shows that these algorithms outperform the conventional greedy method in terms of user satisfaction, resource consumption, and system throughput.

Keywords Resource allocation · Adaptive modulation coding · Packet-level scheduling

1 Introduction

Recently, with the introduction of 4G standards, future progression of wireless data service seems promising. There is a huge demand for high-speed data, video, gaming services that require wide bandwidth and power that pose the primary challenge. In addition, delay, QoS, and need of an all-IP network will further demand the intensive design of next-generation networks. The Long Time Evolution-Advanced (LTE-A), an outcome of 4G telecommunication system is a promising technology. It offers tremendously high data rate of 1 Gbps in downlink, and up to 500 Mbps in uplink, to the mobile users using Orthogonal Frequency Division Multiple Access [1, 2].

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Design of folded architecture for One Dimensional DWT using Verilog

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Abstract - The goal of image compression is to reduce the file size while keeping the image quality high. Digital image can be transformed using discrete wavelet transform (DWT). The lifting based DWT have lower computational complexity and reduced memory requirement. The lifting scheme is being increasingly used for image coding and makes use of parallel and pipeline technique. The lifting architecture makes use of multiplier and adder. A large number of adder designs are available based on the constraint of speed and power consumption. Ling adders have less delay when compared to carry look ahead (CLA) adder. Shift and add multiplier optimizes the multiplication and also reduces the complexity in hardware resources. This paper proposes a pipelined one dimensional DWT with lifting coefficients represented in quantized format 2:14.

Keywords - Discrete wavelet transforms (DWT; lifting based DWT; parallel; pipeline; lifting scheme.

I. INTRODUCTION

The compression techniques are used to efficiently utilize the memory .The DWT is being increasingly used for image compression. The one dimensional discrete wavelet has been applied in many image coding techniques. Wavelets are nothing but mathematical functions that splits the data into different frequency components, and then study each frequency component with a resolution matched to its scale. The advantage of using wavelet helps in splitting the signals into different sub bands and provides both frequency and time localization. Because of its excellent locality in time-frequency domain, wavelet transform is prominent and largely used for signal analysis, compressing. DWT can be realized by two different methods: 1) convolution based 2) lifting based [3]. Convolution based Filter bank implementation of DWT contains two FIR

filters. It has been traditionally implemented by convolution or the finite impulse response (FIR) filter bank structures. Such implementations require both large number of arithmetic computations and storage, which are not desirable for either high speed or low power image/video processing applications. The advantage of lifting based architecture over the convolution is that it has reduced computational complexity and requires less memory [4]. This is very attractive for real time application. The architecture used for implementing lifting scheme suffered from critical path latency and had complex control procedure. In order to solve the problem the efficient folded architecture (EFA) for lifting scheme was proposed. The efficient folded architecture was the improvement done to lifting scheme. Here the intermediate data that is used to compute the output data are circulated on different path. Thus intermediate data can be processed in parallel by employing parallel and pipe lining technique. With this operation the convolution lifting based DWT is developed into parallel one. The resulting architecture will have short critical path latency. Moreover the architecture has repeatability. Based on this EFA is derived by employing the fold technique. Making use of EFA reduces the hardware resource along with that it reduces critical path latency and also number of registers used.

II. LIFTING SCHEME

DWT can be efficiently designed with lifting scheme. The lifting scheme has been developed as a flexible tool suitable for constructing second generation wavelet. The lifting scheme consists of 3steps mainly split, predict and update. fig1 shows the block diagram of lifting based DWT [5].

Multi Filter Based Acoustic Echo Cancellation Using Adaptive Algorithms

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Abstract—Adaptive filter is a filter that self-adjusts its transfer function according to an optimization algorithm driven by an error signal. Because of the complexity of the optimization algorithms, most adaptive filters are digital filters. These are required for some applications because some parameters of the desired processing operation are not known in advance. It uses feedback in the form of an error signal to refine its transfer function to match the changing parameters. Adaptive filtering techniques are used in a wide range of applications, including, adaptive noise cancellation, echo cancellation, adaptive equalization and adaptive beam forming. Acoustic echo cancellation is a common occurrence in today's teleconference systems. The signal interference caused by acoustic echo is distracting to users and causes a reduction in the quality of the communication. This paper focuses on the use of Least Mean Square (LMS), Normalized Least Mean Square (NLMS) and Frequency Domain Adaptive Filter (FDAF) algorithms to reduce the unwanted echo, thus increasing communication quality.

Keywords: Acoustic Echo Cancellation (AEC), Adaptive Filters, LMS Algorithm, FDAF, MSE, ERLE

I. INTRODUCTION

In hands-free telephony and in teleconference systems, the main aim is to provide a good free voice quality when two or more people communicate from different places. The problem often arises during the conversation is the creation of echo. This problem will cause the bad quality of voice signal and thus talkers cannot hear clearly the content of the conversation. This echo is actually the noise which is created by the reflection of sound waves by the wall of the room and the other things existing in the room [1].

Day by day we find loads of changes in communication techniques. Today people are more interested in wireless communication, like using cell phones instead a normal telephone. The objective of this work is to find out a good echo removal algorithm along with suitable adaptive filter, which is capable of providing convincing results for real-time applications. The basic component of an echo canceller is an adaptive filter. The adaptive filter estimates the echo path, based on which a replica of the echo is created and subtracted from the combination of the actual echo and

the near-end speech signal. Since there has been a revolution in the field of computers in recent years, this work attempts to carry out the approach of multi filter based acoustic echo cancellation using different adaptive algorithms with the help of MATLAB software.

II. METHODOLOGY

Acoustic echo occurs when an audio signal is reverberated in a real environment, resulting in the original intended signal to be attenuated, time delayed images of the signal. This paper will focus on the occurrence of acoustic echo in telecommunication systems [1]. Adaptive filters are dynamic filters which iteratively alter their characteristics in order to achieve an optimal desired output. An adaptive filter algorithmically alters its parameters in order to minimise a function of the difference between the desired output $d(n)$ and its actual output $y(n)$.

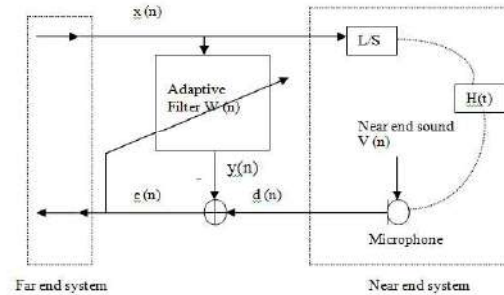


Fig. 1: Acoustic Echo Cancellation System

Figure 1: shows a block diagram of the acoustic echo cancellation system. Here the filter $H(t)$ represents the impulse response of the acoustic environment, $W(n)$ represents the adaptive filter used to cancel the echo signal [2]. The adaptive filter aims to equate its output $y(n)$ to the desired output $d(n)$. At each iteration the error signal, $e(n) = d(n) - y(n)$, is fed back into the filter, where the filter characteristics are altered accordingly. When the adaptive filter output is equal to desired signal the error signal goes to zero. In that situation the echoed signal would be completely cancelled and the far user would not hear any of their original speech returned to them. The principle of the AEC is to

Comparative Analysis on the Performance of Sub Pixel Motion Estimation Algorithms of HEVC

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Abstract—In video compression sub pixel motion estimation is a key factor for achieving enhanced compression ratio. It is the process of searching the best matching block in an enlarged (interpolated) reference search area. For sub pixel motion estimation quarter pixel search is adopted in High efficiency video coding (HEVC) to achieve more accurate motion description and higher compression efficiency. Sub pixel motion estimation requires interpolation of inter pixel values which undesirably increases the overall complexity. In addition to that it is also time consuming process. In this paper the performance of full search (FS) and test zone (TZ) search algorithms implemented in HEVC standard have been compared by means of enabling and disabling the sub pixel motion estimation. The experimental results show that sub pixel motion estimation provides more accurate PSNR value over the one without sub pixel based motion estimation.

Keywords: HEVC, Block Based Motion Estimation, Sub Pixel Motion Estimation

I. INTRODUCTION

HEVC is the most recent joint video project of the ITU-T VCEG and ISO/IEC MPEG standardization organizations [2]. The main goal of HEVC standardization effort is to enable significantly improved compression performance relative to existing standards-in the range of 50% bit rate reduction for equal perceptual video quality. Video compression involves video coding which exploits the high temporal correlation between successive frames. To exploit the high temporal correlation existing between successive frames block based video coding is widely used in current HEVC video coding standard. The motion estimation (ME) and compensation are two essential processes in block based video coding. The ME technique finds the best matched block position (motion vector) in the past (or future frames) for every block in the current video frame, whereas the motion compensation generates compensated frames by using these motion vectors [4]. Multiple prediction modes and multiple reference pictures are adopted in HEVC to achieve more accurate prediction and higher compression efficiency. To further improve the compression rate, motion estimation with sub pixel

accuracy is essential because movements in a video sequence are not necessarily multiples of the sampling grid distance in the rectangular sampling grid of a camera [6]. Hence the modern coding standards like H.264/AVC, HEVC have adopted sub pixel accuracy ME approaches to improve the decoded video quality. For sub pixel motion estimation, half-pixel search is frequently used in H.263, MPEG-1, MPEG-2, and MPEG-4, whereas quarter pixel search is adopted in H.264/AVC and HEVC [1]. One of the main problems of sub pixel accuracy ME approaches are their high computational load. It also requires much computational time which is particularly not suitable for applications like video conferencing and video telephony. The increased complexity is due to the required interpolation process and the increased number of candidate blocks to be searched.

This paper is organized as follows. Section II provides an overview of HEVC. Section III explains about block matching motion estimation and the two algorithms of motion estimation of HEVC. The sub pixel motion estimation and the principles of sub pixel interpolation of HEVC are respectively described in section IV. The experimental results are discussed in Section V and finally section VI presents the concluding remarks.

II. OVERVIEW OF HEVC

The video coding layer of HEVC employs the same “hybrid” approach (inter/intra picture prediction and 2D transform coding) used in all video compression standards since H.261. Fig. 1 shows the block diagram of HEVC.

Each frame is divided into square blocks called coding units (CUs) with maximum size 64×64 and recursively subdivided into square blocks till 8×8. The CUs are assigned quad trees where each CU is subdivided into quad tree based prediction blocks called prediction units (PUs) of either intra or inter type. The first frame of a video sequence is coded using only intra picture prediction. For all remaining frames of a sequence or between random access points, inter picture prediction is used. The inter picture prediction is used to

Image Enhancement Using Fuzzy Technique

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Abstract - Image enhancement means to improve the quality of the images for better human perception. The impulsive noise can be reduced and also by using different image enhancement techniques edges of the images can be sharpened. The quality of the original image is increased for better analysis by a human or a machine by using image enhancement technique. One of the image enhancement techniques is fuzzy image enhancement.

Fuzzy logic deals with studying of possibilistic logic or several valued logic, it uses approximation rather than fixed and exact reasoning. It handles partial truth, where the truth values may either be in between of completely true values or completely false value. Fuzzy image processing is considered important application areas of fuzzy domain. The purpose here is to increase the contrast of the original image using triangular membership function and fuzzy rules from Mamdani fuzzy inference system. Edge detection of the original image is done and by using triangular membership function image is converted to fuzzy plane from pixel plane. Fuzzy rules are applied on the original image and defuzzification is done on the same to get the enhanced image. For enhanced image Mean Square Error (MSE) and Peak Signal to Noise Ratio (PSNR) has been calculated.

The implementation work will be done using MATLAB 7.5 image processing tool box.

Keywords - Fuzzy set; Mamdani fuzzy inference system; Membership function; Fuzzy if then rules.

I. INTRODUCTION

Image enhancement process has many techniques that are sought to improve the visual appearance of a image or to convert the image so has to be better suited for analysis by a human or a machine. Image enhancement is used for improving the quality and contrast of the image.

The fuzzy image enhancement includes membership functions which convert the image into fuzzy membership plane from pixel plane and linguistic variables which include fuzzy based rules in the form of sentences for image processing. Membership function for both input and output is selected and their range has been set for both respectively [1].

Fuzzy is a system of knowledge representation, it processes human knowledge in the form of fuzzy rules. Fuzzy image processing enhances image contrast very efficiently. Fuzzy technique can manage the ambiguity and vagueness of the image effectively [2]. Fuzzy entropy, measuring the amount of blur in an image is a function which increases when the sharpness of its image decreases. Three parameters are considered such as intensification parameter, fuzzifier and crossover point.

The degraded image representing light objects in dark background is enhanced by contrast minimization technique. A cross over point is considered, which is associated to stop fluctuation. Histogram is used to covert Shannon entropy to fuzzy entropy. Parameters of the images are calculated. After selecting cross over point, membership function is modified with respect to cross over point. Gaussian membership function is for used membership value modification [5].

Initially the minimum intensity pixel value of the input image will be assigned to 0 and maximum intensity pixels values to 1. The intensity mapping functions maps the fuzziness or uncertainty regarding low contrast from intensity plane to fuzzy plane by using membership function. The pixels are grouped with respect to their intensities. Finally image is converted from membership plane to fuzzy plane which is known as defuzzification [6]. The different ranges of "salt" and "pepper" noise in the image is removed by using different filters. For comparative study purpose different filters are applied. The filter removes salt and pepper noise efficiently. Boundary detection is also

Super Resolution of Images Based on Regularised Sparse Representation

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Abstract - In many of the imaging applications such as photographs, videos and magnetic resonance (MR) imaging low resolution images (LR) are captured. This low resolution images may be due to the image acquisition devices, optics, hardware storage of the digital imaging system. Super Resoluted images find applications in the field of the medical diagnosis and the satellite surveillance. The main approach of the project is to obtain the high resolution (HR) images from the acquired low resolution images because high resolution images are usually desired in most of the imaging applications. This is achieved by using structured sparse representation which involves gradual magnification and structured sparse representation. Gradual magnification stage consists of the testing and the training process during which the databases are created and stored in the dictionary. These dictionary will be used for the reconstruction of the image which is the High resolution image.

Keywords - Sparse Representation; Dictionary learning; Super Resolution; Bicubic Interpolation.

I.INTRODUCTION

Image Super Resolution is a method of obtaining High Resolution image (HR) from one or more multiple Low Resolution (LR) images. Super Resolution reconstruction is the technique in which we are combining many low resolution images so that we can obtain an image which is of higher resolution. For the proper processing of the images and further conducting any analysis on the images we need the images which are of high resolution. High Resolution Images are those images whose pixel density within an image is large and hence they provide more details regarding the images. If the pixel density within an image is small then those images are called as Low Resolution Images and they less amount of information. High Resolution Images helps in representing the images in different symbols or the pictures so that the user can be able to get

more information about the picture or the user can understand the picture in a better way. Image Resolution is used to provide the information or details of the image and hence if the resolution of the image is higher we get more details about the image.

A Sparse signal is the one that can be represented as a linear combination of relatively few base elements in a complete dictionary. Sparsity means vector or matrix containing more amount of zeros. Sparse Representation finds application in image compression, analysis and image denoising. The image patches can be represented interms of their dictionaries and their corresponding sparse representations. The dictionaries may contain low resolution databases or high resolution databases. And hence we can represent the high resolution image patches by generating its sparse representation which is chosen over the dictionary of the high resolution image patches and in the same way we can represent the low resolution image patches by generating its sparse representation which is chosen over the dictionary of the low resolution image patches. Experimental results show that if dictionaries are trained jointly then the sparse representation of the low resolution images convey the same information as that of the sparse representation of the high resolution images. By taking the sparse representation of the low resolution image along with the high resolution dictionary its possible to obtain the high resolution patch. The dictionary for the high resolution and low resolution image patches is obtained during the training phase. The Regularised Sparse Representation involves two stages namely testing and training. During the training process we take a good images set of and

Firefighting Robots Incorporated Using Swarm Technology

Gail Goveas, Sridevi Hegde, Juby Mathew, Vinit Mankame and Prajwal Dsouza

Abstract—Swarm robotics is a type of collective behavior in which many individual independently functioning robots work collectively to complete the task in hand in a more efficient manner. Each individual robot has a mind of its own and is autonomously working. Firefighting robots incorporating this technology have been suggested in this paper. As a prototype, a main robot and a second robot referred to as slave is used. The master robot is used to control the movement of the slave robot. Both the master and slave are independent firefighting robots and are capable of detecting and fighting fire on their own. This paper provides a detailed implementation of object and fire detection, and use of Bluetooth module to provide communication between the nodes.

Index Terms— Bluetooth; Firefighting; Flame; Ultrasonic.

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I. INTRODUCTION

Swarm robotics is a new approach to the coordination of multi-robot systems, which consists of large numbers of mostly simple physical robots. Firefighting robots, on the other hand, are devices that use sensors to learn the environmental conditions and have a software that instructs them to function in a required manner. Firefighting robots incorporating swarm refers to a system with multiple robots that are controlled by one main robot to overcome firefighting problems.

There are various types of firefighting robots present which may be broadly classified as fixed or mobile systems. In this project, fixed firefighting robots are used. Fixed firefighting robots mainly use ultrasonic sensors or IR sensors whereas mobile systems have more advanced features that include navigation. In either type of robots, it is possible to implement swarm intelligence. Swarm intelligence is derived from the study of bees or termites [2]; where each individual termite or bee learns its job from the neighboring one. Swarm behavior may also be referred to as a collective or emergent behavior. Each individual robot is capable of extinguishing fire, and it adapts to the environment quickly using the sensors.

This project is a prototype of the aforementioned theory. There is the main master robot and another robot called the slave. Both the master and the slave have the ability to sense and fight fire but the movement of the slave will be controlled by the master robot. The master has ultrasonic sensors which are used to detect an object and both the master and slave have fire and gas sensors to detect fire. Swarm is a combination of centralized as well as decentralized control. The movement of this implementation is centralized but the robots have a brain of their own and can extinguish fire which makes it decentralized.

Robotics in the field of firefighting is being studied to reduce the risk of lives of firefighters exposed to dangerous environments. The implementation of this project provides a more efficient method to fight fire. Robots adapt to the environment immediately and if any one of the slaves fails, it won't impact the others. All the robots work collectively which appears to look like a single entity.

Swarm robotics is a promising upcoming technology which helps manage multi-robot systems rendering it an efficient way of communication. Using this technology for real time applications like firefighting will be revolutionary if implemented on a larger scale.

A Study on Gabor Transform and Optic Flow Method for Human Action Classification

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Abstract—Action recognition in realistic videos is a challenging problem in computer vision. This paper presents a method of automatically recognizing the action performed by the human. Human action recognition is a developing area in the computer vision. In this work, an efficient algorithm for recognizing the human actions is studied. The captured video is initially converted into frames. The shape information contained in the spatial domain and motion information in the temporal or the time domain is used to categorize human actions. The spatial features or the form features are extracted using the log Gabor filters. The log Gabor filters are used to achieve even coverage of the spectrum. These features are then maximum pooled. The motion information or the flow features are obtained by optic flow method. The flow between the pair of frames is learnt using the Gaussian low-pass filter. The resultant features are maximum pooled. The flow and the form features are concatenated and reduced using PCA (Principal Component Analysis) method. The Support Vector Machine (SVM) is used for classification of actions.

Keywords: *Gabor Filters, Optic Flow, PCA, SVM, Human Action Classification*

I. INTRODUCTION

Human action recognition these days is the developing area in the computer vision. The aim of the human action recognition is to recognize the action performed in a video automatically thus reducing the need for human interaction.

Many algorithms have been used till date for the human action recognition. In the initial set of algorithms blob based, holistic and part-based representations methods were used for recognition. But however they failed to produce accurate results under different variations. This led to a need for an efficient algorithm which would produce accurate results even under such variations.

Human activities consist of a group of human and object movements which have a semantic meaning and action recognition tries to find and classify these movements in video data. Feature extraction is the first step of any recognition problem. Several methods have been proposed to represent features in video.

The tracks of a person's body parts were used as input features in the early attempts at human action recognition [1, 2, 3]. The motion information is contained along the frames in the temporal domain. The

articulation motion which defines an action is found through tracking the body parts. However, it depends on correct tracking of either an articulated human model, or many separate regions, both difficult tasks. Carlsson and Sullivan defined action recognition as a shape matching problem [4]. According to them an action is represented by a single unique pose which are used for comparison and recognition of actions. To extract the information from both the spatial and the temporal domains, the earlier two methods are combined in this work and used for recognition of action.

Efros *et al.* [5] apply optic flow filters to a window centered at the human. To learn the flow between the frames, a large temporal window including 25 past and 25 future frames were used. Therefore the time required for the implementation and the input information required also would be more. The static scene recognition model was extended by replacing form features with motion features by Jhuang *et al.* [6]. Here set of flow filters are used to obtain the dense local motion information. The responses are pooled locally, and converted to higher-level responses by comparing to more complex templates learnt from examples. These are pooled again, and fed into a discriminative classifier. Since they concentrated on the motion features alone, very less information about the shape was available.

Laptev and Lindeberg [7] extracted spatio-temporal interest points from the entire video using the 3D Harris corner detector. Classification was done at sequence level, either by nearest-neighbor matching [7]. Dollar *et al.* [8] present a different spatio-temporal interest point detector based on 1D Gabor filters, essentially searching for regions with sudden, or periodic, intensity changes in time. Optic flow is computed as descriptor for each 3D interest region. The set of descriptors is quantized to a fixed set of 3D visual words, and a new sequence is classified by nearest-neighbor matching of its histogram of visual words. The method was extended to unsupervised learning [9]. The Gabor filters used by [8] are limited by the bandwidth.

For the natural images with wide range of spectrum, the earlier method fails to provide accurate results. Therefore in this work we make use of the log Gabor filter for extracting the form or the shape filters and the optical flow method for the motion feature extraction.

Advanced Plant Identification System

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Abstract—With the evolution of technologies, people have adopted their day today lives to utilize the benefits of highly advanced technologies. Plants are among the earth's most useful and beautiful products of nature. Plants have been crucial to mankind's survival. Even today, identification and classification of unknown plant species are performed manually by expert personnel who are very few in number. Several researchers have proposed various techniques for plant recognition. The important aspect is to develop a system which classifies the plants. Shape, vein, color and texture features have been used to identify the leaf and neural network approach is used to classify them. Advanced Plant Identification System (APIS) is an intelligent system which has the ability to identify tree species from photographs of their leaves and it provides accurate results in less time. Probabilistic Neural Network (PNN) is employed with image and data processing techniques to implement general purpose automated leaf recognition for plant classification.

Keyword: APIS, Feature Extraction, Leaf Recognition, Plant Classification

I. INTRODUCTION

It is well known that plants play a crucial role in preserving earth's ecology and environment by maintaining a healthy atmosphere and providing nourishment and shelter to manifold insect and animal species. Plants are also important for their medicinal attributes, as alternative energy sources like bio-fuel and for meeting our various domestic requirements like clothing, timber, cosmetics and food. Leaves play a paramount role in identification of a plant due to its handiness nearly throughout the year, easiness to access, carry and process in computer. As the shape of plant leaves is one of the most important features for characterizing various plants, the study of leaf image retrieval schemes will be an important stage for redeveloping a plant identification system.

Building a plant database for quick and efficient Classification and recognition of various flora diversities is an important step towards their conservation and preservation. This is very important as many types of plants are now at the verge of extinction. In recent times computer vision methods and pattern recognition techniques have been successfully applied towards automated systems of plant categorizing.

Centric-contour distance curve and the eccentricity of the leaf objects are used as shape features [1] but it did not produce accurate results. Some systems employ descriptions used by botanists [2]. But it is not easy to extract and transfer those features to a computer automatically. This paper tries to prevent human interference in the feature extraction process. 6 species of plants were identified [3]. No colour information was processed. They used leaf dent, aspect ratio, leaf vein, and invariant moments to identify plant. Other features that are incorporated in recognizing plants are extracted from vein of leaf (venation). Shape and venation have been used for leaf image retrieval different species of leaves images and are used as database [4]. Colour moments represent colour features to characterize a colour image. It was used for image retrieval [5] and for skin texture recognition [6]. This present work includes colour, vein, and texture feature extraction for improving recognition accuracies. Different leaf images are used as database for this project and it is implemented using MATLAB.

II. METHODOLOGY

Figure 1 shows the block diagram of the proposed approach. The images of leaves of different plants were obtained from and it is resized later as per the requirement. All features are extracted from digital leaf image. These features are orthogonalized by Principal Components Analysis (PCA) [11] as to the classifier, PNN [12] is been used for its fast speed and simple structure. The whole algorithm is easy to implement, using common approaches. The features used to identify plant leaf are described as follows:

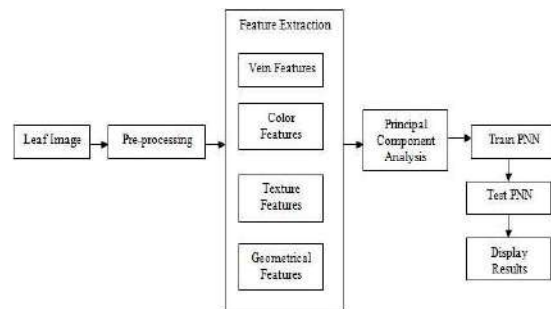


Fig. 1: Block Diagram of the Proposed Plant Identification System

Image Enhancement Using Fuzzy Technique

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Abstract - Image enhancement means to improve the quality of the images for better human perception. The impulsive noise can be reduced and also by using different image enhancement techniques edges of the images can be sharpened. The quality of the original image is increased for better analysis by a human or a machine by using image enhancement technique. One of the image enhancement techniques is fuzzy image enhancement.

Fuzzy logic deals with studying of possibilistic logic or several valued logic, it uses approximation rather than fixed and exact reasoning. It handles partial truth, where the truth values may either be in between of completely true values or completely false value. Fuzzy image processing is considered important application areas of fuzzy domain. The purpose here is to increase the contrast of the original image using triangular membership function and fuzzy rules from Mamdani fuzzy inference system. Edge detection of the original image is done and by using triangular membership function image is converted to fuzzy plane from pixel plane. Fuzzy rules are applied on the original image and defuzzification is done on the same to get the enhanced image. For enhanced image Mean Square Error (MSE) and Peak Signal to Noise Ratio (PSNR) has been calculated.

The implementation work will be done using MATLAB 7.5 image processing tool box.

Keywords - Fuzzy set; Mamdani fuzzy inference system; Membership function; Fuzzy if then rules.

I. INTRODUCTION

Image enhancement process has many techniques that are sought to improve the visual appearance of a image or to convert the image so has to be better suited for analysis by a human or a machine. Image enhancement is used for improving the quality and contrast of the image.

The fuzzy image enhancement includes membership functions which convert the image into fuzzy membership plane from pixel plane and linguistic variables which include fuzzy based rules in the form of sentences for image processing. Membership function for both input and output is selected and their range has been set for both respectively [1].

Fuzzy is a system of knowledge representation, it processes human knowledge in the form of fuzzy rules. Fuzzy image processing enhances image contrast very efficiently. Fuzzy technique can manage the ambiguity and vagueness of the image effectively [2]. Fuzzy entropy, measuring the amount of blur in an image is a function which increases when the sharpness of its image decreases. Three parameters are considered such as intensification parameter, fuzzifier and crossover point.

The degraded image representing light objects in dark background is enhanced by contrast minimization technique. A cross over point is considered, which is associated to stop fluctuation. Histogram is used to covert Shannon entropy to fuzzy entropy. Parameters of the images are calculated. After selecting cross over point, membership function is modified with respect to cross over point. Gaussian membership function is for used membership value modification [5].

Initially the minimum intensity pixel value of the input image will be assigned to 0 and maximum intensity pixels values to 1. The intensity mapping functions maps the fuzziness or uncertainty regarding low contrast from intensity plane to fuzzy plane by using membership function. The pixels are grouped with respect to their intensities. Finally image is converted from membership plane to fuzzy plane which is known as defuzzification [6]. The different ranges of "salt" and "pepper" noise in the image is removed by using different filters. For comparative study purpose different filters are applied. The filter removes salt and pepper noise efficiently. Boundary detection is also

Discrete Cosine Transform Features in Automated Classification of Cardiac Arrhythmia Beats

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Abstract Arrhythmia is an abnormal beat result from any disorder in the conduction of the cardiac electrical impulse. It is very essential to identify and detect arrhythmias correctly in its early phases. Manual diagnosis of arrhythmia beats is very difficult due to their unfamiliar mechanisms and composite nature. Current paper introduces, a machine learning-based methodology proposed for automated cardiac arrhythmia detection. The methodology follows ECG filtering and segmentation using general approach, followed by Discrete Cosine Transform (DCT) for feature extraction, Principal Component Analysis (PCA) for feature reduction and finally classification of arrhythmia beats using k -Nearest Neighbor (k -NN) classifier. In this study, the statistical significance of PCA features is verified using Analysis of Variance (ANOVA) test. Statistically significant features are classified using k -NN and tenfold cross validation. In this study, all the beats of entire *MIT-BIH (Massachusetts Institute of Technology—Boston's Beth Israel Hospital) arrhythmia database* are considered. The five classes recommended by ANSI/AAMI EC57:1998 standard: Non-ectopic (N), Supraventricular ectopic (S), Ventricular ectopic (V), Fusion (F) and Unknown (U) cardiac beats are recognized with an average class specific accuracy of 99.93, 98.41, 98.09, 96.93, 99.7 % respectively and overall average accuracy of 98.61 %. Added validation of the proposed method can result in suitable outcome for therapeutic applications.

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An Automated Procedure for the Detection of Epilepsy Using K-NN Classifier

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Abstract - Epilepsy is an electrophysiological disorder of the brain, characterized by recurrent convulsion. Electroencephalogram is a test that measures electrical activity of the brain but it is often difficult to analyze the activity of such signals visually. Epilepsy is one of the major ailments of concern in developing countries. This project aims at developing a Computer Aided Diagnostic procedure to automatically identify the normal and abnormal activities of human brain and classify them as normal, interictal and ictal. For detecting epilepsy, time-frequency domain analysis such as wavelet packet decomposition is adopted to capture the characteristics of the EEG signal and classify them using KNN (K-nearest neighbor) classifier. Features are selected on the basis of Anova test. Features which are statistically discriminating are selected and ranked. K nearest neighbor is a classifier that classifies all available cases and classifies new cases based on a comparable measure. Class specific accuracy of each class (i.e. normal, interictal and ictal) is computed. Project is implemented using MATLAB.

Keywords - Epilepsy; Anova test; K-nearest neighbor (KNN).

I. INTRODUCTION

Epilepsy is a neurological condition of the brain, which results in abnormal electrical discharge of cortical neurons. Abnormal discharge is caused by the miscommunication between the neurons, catalyzing convulsions. Epileptic convulsion is commonly triggered by stress, lack of sleep and irregularity in medication. In a case study conducted in India, a total of 52,377 (52.74% men) individuals were screened for epilepsy, where 309 prevalent and 66 incident cases were diagnosed of active epilepsy [1]. The population-based studies have provided higher incidence than hospital-based studies.

Neurons present in the nervous system fire in excess when damaged; however, the inception for this irregularity varies considerably in different areas. The cerebral cortex is the main and only area from which seizure activity arises with any frequency. Electrodes placed to the scalp (the electroencephalogram) are often able to detect abnormal activity of a seizure. Seizures can occur in different ways and in different forms. Broadly, they can be divided into primary generalized seizures and focal onset seizures. In primary generalized seizures, the seizure affects all of the cerebral cortex simultaneously. In focal onset seizures, it involves a localized cluster of neurons.

Epileptogenesis is a process by which a patient's brain undergoes transformation from normal neuronal network into a hyperexcitable network. The hyperexcitable network is formed by the neurons present in the nervous system. This network results in sudden discharge of electrical impulses all over the brain resulting in uncontrollable voluntary and involuntary activity. Epilepsy is unprovoked and is prevalent in children and elderly people. Convulsion commonly called as seizure result in involuntary movement of muscles, changing the behavior as well as movement of the individual. Episode of epilepsy varies depending on the individual. Cases vary from mild voluntary movement to uncontrollable involuntary activity. A comparative study on epilepsy classification is done in [2]. Study on EEG signals by Empirical mode decomposition which decomposes the signal into intrinsic mode functions and instantaneous frequency is explained in [3]. In Welch method periodogram is applied to each data segment and all periodograms are averaged to obtain Power spectral density[4].

II. PROPOSED METHOD

The proposed procedure is explained in figure The input EEG signals are administered to wavelet packet decomposition (WPD) and sub bands are extracted. On each of these activities

Object Recognition using Discriminative Robust Local Binary Pattern and SVM classifier

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Abstract - Object recognition is process of detecting objects in digital images and videos. It is widely used in face detection and pedestrian detection. Object recognition consists of object identification and object classification. Object identification requires both edge and texture information. Discriminative Robust Local Binary Pattern (DRLBP) is used. For object classification Support Vector Machine (SVM) is used. Combination of DRLBP and SVM gives better results compared to other techniques.

Keywords - Discriminative Robust Local Binary Pattern; Object Recognition; Pedestrian.

I. INTRODUCTION

Object recognition is very important process. Object recognition is mainly used in face detection and pedestrian detection. Object recognition is a process of identifying and classifying the objects in digital images and videos. Object recognition consists of two steps, object identification and object classification. Object identification is process of identifying the object and object classification is classifying the detect object to specific class. Detecting the objects for human is very easy but for machines it is difficult. For this purpose algorithmic model is developed.

Surface texture of the object is one of important feature for object recognition. Many techniques are used to extract the texture information of the object. Local Binary Pattern (LBP) is commonly used to extract the texture information. From [2], LBP has two states 1 and 0 and one threshold state. LBP is also used for face detection in many applications. But LBP has small pixel fluctuations these fluctuations results in noise. Hence it is more sensitive to noise. To reduce the noise in the image, X. Tan and B. Triggs[3] introduces new technique called Local Ternary Pattern (LTP). LTP consist of two threshold states and three states represented by 1,0 and -1.

It reduces the noise completely. Both LBP and LTP have intra-class variations. If the intensity of the image changes during different illumination condition there are no changes in the LBP and LTP pattern. This condition is undesirable for object recognition.

To avoid this condition [4] D. T. Nguyen, Z. Zong, P. Ogunbona introduced new technique Non-redundant local binary pattern (NRLBP). In NRLBP uncertain bit is used to represent the small pixel fluctuations. LBP, LTP and RLBP provide only the texture information of the object but object recognition requires edge information along with texture information. Edge is the outer boundary of the object and it provides the shape of the object.

Object detectors have to manage with illumination, clustered background and object position. Object detectors are designed by adapting these challenges. Object detection requires edge and texture information. To obtain both edge and texture information new technique called Discriminative Robust Local Binary Pattern (DRLBP) is introduced. It provides both edge and texture information of the object. For object classification, Support Vector Method is used. It classifies the input image belonging to specific class. The performance of DRLBP was calculated for Caltech 101 dataset.

II. OVERVIEW OF THE PROJECT

The block diagram of the system is shown in Figure 1.

Input image: Input image is a color image taken from the dataset. Here Caltech 101 datasets are used.

Enhancement of LSB steganography using Exploiting Modification Direction

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Abstract—In the conventional Least Significant Bit (LSB) steganography methods, the LSB plane of the image is replaced with secret bit. To overcome higher distortion and low payload capacity, Exploiting Modification Direction (EMD) method is proposed in this paper. Image steganography using Exploiting Modification Direction, embeds the data along pixel pair of image by incrementing or decrementing either pixel by one. Since the directions of modification are fully exploited, the proposed method provides high embedding efficiency that is better than LSB technique.

Keywords—Steganography, Exploiting Modification Direction (EMD), Least Significant Bit (LSB)

I. INTRODUCTION

DATA hiding is a technique that conceals data into a carrier for conveying secret messages confidentially. Digital images are widely transmitted over the Internet; therefore, they often serve as a carrier for covert communication. Images used for carrying data are termed as cover images and images with data embedded are termed as stego images. After embedding, pixels of cover images will be modified and distortion occurs. The distortion caused by data embedding is called the embedding distortion. A good data-hiding method should be capable of evading visual and statistical detection while providing an adjustable payload. The primary goal of attack on steganographic systems, termed steganalysis, is to detect the presence of hidden data by finding statistical abnormality of a stego-media caused by data embedding. Generally speaking, the more the secret data are embedded, the more vulnerable is the steganographic system to steganalytic attempts not be aware of the existence of the hidden secret message. This kind of data hiding technique is called as image steganography [1]. There are two types of image steganographic techniques: spatial domain and transform domain methods. Spatial domain algorithms embed information directly into the cover-image without performing other changes. They are easier to implement, but are not as robust. Transform domain algorithms embed secret

information into a transform space. The advantage of these algorithms is good robustness; however, the disadvantage is less capacity. One of the basic methods of data embedding in spatial domain is least significant bit substitution method.

The least significant bit substitution method, a well-known data hiding method. In LSB embedding, the pixels with even values will be increased by one or kept unchanged. The pixels with odd values will be decreased by one or kept unmodified [2]. As a result, some structural asymmetry (never decreasing even pixels and increasing odd pixels when hiding the data) is introduced, and thus it is very easy to detect the existence of hidden message even at a low embedding rate using some reported steganalytic algorithms, such as the Chi-squared attack [3] and regular/singular groups (RS) analysis[4].

II. METHODOLOGY

A. LSB STEGANOGRAPHY

The LSB based Stegenography is one of the steganographic methods, used to embed the secret data in to the least significant bits of the pixel values in a cover image. e.g. 110 can be hidden in the first eight bytes of three pixels in a 24 bit image.

```
PIXELS: (00100111 11101001 11001000)
        (00100111 11001000 11101001)
        (11001000 00100111 11101001)
110 :   (001101110)
RESULT: (00100110 11101000 11001001)
        (00100111 11001000 11101001)
        (11001001 00100111 11101000)
```

Here number 110 is embedded into first nine bytes of the grid and only 5 bits are changed.

The main disadvantage of this algorithm is that, to embed a single character it requires many pixels which causes more image distortion. So we need an advanced algorithm like Exploiting modification direction (EMD) to avoid this.

B. EXPLOITING MODIFICATION DIRECTION

The main idea of the EMD embedding scheme is that each $(2n + 1)$ -ary notational secret digit is carried by n cover pixels, and only one pixel value increases or decreases by 1 at most. For each block of n cover pixels, there are $2n$

Security Improvisation in Steganography Using ECC

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Abstract—Securing data is a challenging issue in today's era. A lot of applications are Internet-based and the security of information has become a fundamental issue. The idea of information security leads to evolution of Cryptography. But alone cryptography can't provide better security approach because the scrambled message is still available to the intruder. So here we are using a combination of steganography and cryptography that enhance the security of communication over an open channel. This paper focuses on the combination of Least Significant Bit or fibonacci steganography method and Elliptic curve cryptography in such a way to make it harder for a steganalyst to retrieve the plaintext of a secret message from a stego-object.

Keywords: *Elliptic Curves, Koblitz Method, Fibonacci Numbers*

I. INTRODUCTION

Cryptography and Steganography [1] are well known and widely used techniques to send vital information in a secret way. One hides the existence of message and other distorts the message itself. Cryptography is a part of information security. It is an art of securing the data. It is mainly concerned with storing and transmitting the information safely over the insecure medium like Internet by encoding text data into a form non recognizable format with the help of various encryption algorithms and only the intended user will be able to convert it into original text. The process which converts original data into the unreadable form is called encryption process. Cryptography is not capable of hiding the presence of data alone and it cannot protect data effectively. So in order to further enhance the security we want to provide a two layer approach for providing an improved and better security. Steganography is also concerned with security of transmitting data but with a different objective. Steganography allows people to communicate secretly by hiding the data within data.

The difference between Steganography and Cryptography is that the cryptography focuses on keeping the contents of a message secret whereas steganography focuses on keeping the existence of a message secret. Steganography and cryptography both are ways for protecting information from unwanted

parties. The advantage of steganography over cryptography alone is that the intended secret message does not attract attention to itself as an object of scrutiny.

There are many cryptography and Steganography techniques available: Elliptic Curve Cryptography is one of the most powerful techniques, and Least Significant Bit method is the simplest one. In this paper we will focus to develop one system, which uses both cryptography and steganography for better confidentiality and security.

A. Steganography

Steganography is the art and science of invisible communication of messages. This is done by hiding information in other information, i.e. hiding the existence of the communicated information. The word steganography is derived from the Greek words "stegos" meaning "cover" and "grafia" meaning "writing" defining it as "covered writing". In image steganography the information is hidden in images.

Today steganography is mostly used on computers with digital data being the carriers and networks being the high speed delivery channels.

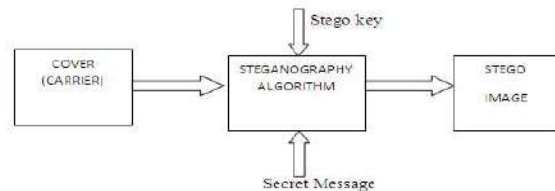


Fig. 1: Model for Steganography

The basic model of steganography consists of Carrier, Message, Embedding algorithm and Stego key. The model for steganography is shown in Fig. 1. Carrier is also known as a cover-object, which embeds the message and serves to hide its presence. Digital images, videos, sound files, and other computer files that contain perceptually irrelevant or redundant information can be used as "covers" or carriers to hide secret messages. After embedding a secret message into the cover-image, a so called stego image is obtained.

Implementation of an Intelligent System for Real-Time Driver Fatigue Monitoring & Cautioning System for Accident Avoidance

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Abstract—Developing intelligent systems to prevent car accidents can be very effective in minimizing accident death toll. One of the factors which play an important role in accidents is the human errors including driving fatigue relying on new smart techniques. In this proposed system work has been done to detect the signs of fatigue and sleepiness from the face of the person at the time of driving. This system is based on different algorithms and uses a machine learning approach for visual object detection (face) which is capable of processing images extremely rapidly and achieving high detection rates. The work is distinguished by three key contributions in detection of face area from a first video frame namely- Integral Image, AdaBoost and Cascading. The focus in this research is also on increasing accuracy in detection of eyes and mouth while consuming less time by using canny and sobel edge detector. The proposed system has been implemented on four different video sequences with average accuracy of 93.18% and detection rate (DR) of 92.71 % out of total 35000 image frames. High accuracy in face detection, low error rate and quick processing of data distinguishes this system from similar ones. This system can minimize the number of accidents caused by driver's fatigue.

Keywords: Driver Fatigue; Integral Image; Adaboost; Cascading; Sobel and Canny Edge Detector

I. INTRODUCTION

Driver impairment due to alcohol/drugs, drowsiness, and distraction is one of the most significant causes of fatal accidents in India and around the world [1]. People are commuting longer distances, working longer hours and spent much more time driving, which causes fatigue and drowsiness. There are more in-vehicle information and entertainment devices in the vehicle along with increase use of cellular phones, although very useful in providing up to date information and increased comfort, takes away driver attention from the primary task of driving. Increased use of alcohol and drugs, which can cause impairment, among drivers is raising huge concerns among safety community. The role of human factor in accidents cannot be ruled out; According to national statistics, in 90 to 95 percent of car accidents in Iran, human factor plays a pivotal role. In general, the driver fatigue accounts for 25 per cent of accidents and

approximately 60 percent of road accidents result in death or serious injury [2].

In recent years, the use of intelligent systems in cars has developed considerably. These systems use wireless sensor networks to monitor and transmit the condition of the car and the driver. Smart cars, which use software techniques to control engine speed, steering, transmission, brake, etc. has improved the quality of driving drastically. Ad-hoc networks were the first systems to develop the automatic navigation in cars [3], [4]. A noticeable weakness of these systems is that their response to environmental changes is not real time. It is especially important in driving where time is a critical factor in driver's decision. On the other hand, another method to check the driver fatigue is monitoring the physical condition and facial expressions of the drivers, which wireless sensor networks are unable to process and transmit these information with adequate precision.

The materials used for this work are listed below:

- The videos are taken at the real-time.
- The software used is MATLAB R2013a.
- 12MP Web camera.

II. LITERATURE SURVEY

Up to now, leading car companies have proposed various systems to prevent drowsiness of drivers at the time of driving specially at night, all of which have their merits and weaknesses. These techniques can be classified into three main categories:

Models based on mathematic and computation.

- Monitoring systems of the driver and the car based on sensor networks.
- Systems based on detection of the driver fatigue.

A. Related Works

Connor *et al.* (2002) explored the risks associated with the drowsiness of the drivers of heavy vehicles and proposed some strategies based on intelligent systems [5]. Johns (2003) proposed a new method to monitor

Implementation and Evaluation of Edge Adaptive Pixel Pair Matching Technique for Data Embedding

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Abstract - Steganography is the art of concealing secret information inside cover media. Pixel Pair Matching (PPM) is a method of steganography proposed in spatial domain, where the values of pixel pair is used as the reference coordinate and a coordinate in the neighborhood set of this pixel pair is searched according to a given message digit. The pixel pairs are then replaced by the searched coordinate to conceal the message. The main goal of steganography is to hide large payload inside a cover object with less visual artifacts. Exploiting Modification Direction (EMD) and Diamond Encoding (DE) are two data hiding methods proposed in PPM. The maximum capacity of EMD is limited to 1.161bpp and DE extends the payload of EMD by embedding the digits in larger notational system. This work is an implementation and evaluation method over the existing methods for offering lower distortion by providing more compact neighborhood sets for embedding digits in any notational system. It takes pixel pairs along the edges of image so that the visual quality of stego image is not altered, hence the efficiency of steganography can be improved. It facilitates user to hide both secret text and secret image according to his requirements.

Keywords - *Steganography; Embedding; Payload; Cover Image, Secret Image*

I. INTRODUCTION

Security of the information is one of the major concerns in present world of communication. Cryptography and Steganography are two major techniques that manipulate the information to hide their existence. The applications of these techniques are in military messages, computer science and other related fields, credit card information, medical data information, corporate data, personal files etc. Cryptography manipulates the

secret data such that one cannot understand the encrypted data, but can suspect about the existence of secret data. Steganography is the method of hiding secret data inside a cover object, such that the third party will not be aware about the existence of secret data. Steganography is extension of Cryptography and used where encryption is not recommended.

A. Types of Steganography

On the basis of cover object, steganography is classified into Audio Steganography, Video Steganography, Image Steganography etc. Image Steganography is very popular because of popularity of digital image transmission over the internet. Image Steganography use redundancy of digital image to hide the secret data. It may be divided into two categories. They are spatial-domain and frequency-domain methods. In the spatial domain, the secret messages are embedded in the image pixels directly. In the frequency-domain, however, the secret image is first transformed to frequency-domain, and then the messages are embedded in the transformed domain. Image used to hide secret information is cover image and image with secret data is stego image. The main goal of the image steganography is to hide large payload of data inside image which should cause less distortion in stego image [1].

Spatial domain Techniques:

Least Significant Bit (LSB) substitution: LSB substitution method, which takes fixed k number of least significant bit in each pixel to embed secret message. It is the easiest method to hide message in an image. However, it is easy to retrieve the data from the stego-image if the value of k is found [2].

PPM techniques: In PPM technique a pixel pair is selected as reference and a new coordinate is searched along neighborhood set and replaced

Energy-Efficient Selection of Cluster Heads for Wireless Sensor Networks

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Abstract—Wireless Sensor Networks (WSNs) have received a lot of attention in recent years due to the developments in wireless technologies. Since WSNs are easily deployable they find applications in fields such as battlefield surveillance, healthcare, security and safety monitoring in industries, pollutant tracking and so on. Despite the varied applications of WSNs, they are limited by sensor node battery lifetime. Sensor nodes are battery-operated and once all the nodes in the network run out of energy, the network ceases to be active. So, it is crucial to employ energy-efficient methods in WSNs and thus, prolong the network lifetime. This paper presents a comparison between LEACH (Low Energy Adaptive Clustering Hierarchy) protocol and its improved versions based on energy-efficiency and its subsequent effect on the network lifetime.

Keywords: *Wireless Sensor Networks, LEACH, Energy Efficient, Network Lifetime*

I. INTRODUCTION

Wireless Sensor Network (WSN) is a wireless network that has spatially distributed sensor devices to sense various environmental conditions and accumulate the sensed data at a central location, such as a Base Station (BS). Since energy is an important factor in WSN design, a number of routing protocols have been proposed, that aim to achieve minimum energy consumption and hence, maximize network lifetime. Generally, data aggregation and hierarchy are used in WSNs to reduce energy consumption [1].

LEACH [2] is a hierarchical based routing protocol for WSNs. One of the drawbacks of LEACH is the random election of CHs leading to imbalance in the energy level of the sensor nodes [3]. EECHS [3] and P-EECHS [4] algorithms improves the CH selection strategy and thus, minimize energy consumption in the network as shown by simulation results.

II. ADVANTAGES OF HIERARCHICAL SCHEMES IN WSNs

Routing protocols for WSNs are classified based on network structure as: flat, hierarchical and location-based.

In particular, hierarchical routing is an efficient way of reducing energy consumption by means of data aggregation and data fusion, which minimizes the number of messages transmitted to the BS. Cluster

formations and special task assignments to CHs can specifically contribute to increasing the scalability, lifetime, and energy efficiency of the whole network.

III. LOW ENERGY ADAPTIVE CLUSTERING HIERARCHY (LEACH) PROTOCOL

Heinzelman [2] introduced a hierarchical clustering algorithm for sensor networks, called Low Energy Adaptive Clustering Hierarchy (LEACH). LEACH is a protocol based on clusters. LEACH randomly selects a few sensor nodes as cluster heads (CHs) and rotates this role to evenly distribute the energy consumption among the sensors in the network.

LEACH's operation is divided into rounds. Each round is divided into two phases: set-up phase and the steady-state phase. CHs are chosen in the set-up phase and the data are transferred from the nodes to the CH and onto the BS during steady-state phase.

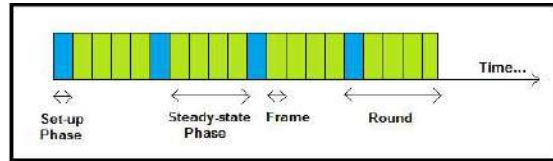


Fig. 1: LEACH Operation

In LEACH, cluster-heads are stochastically selected. In order to select cluster-heads each node n determines a random number between 0 and 1. If the number is less than a threshold $T(n)$, the node becomes a cluster-head for the current round.

The threshold for LEACH is given as [2]:

$$T(n) = \frac{p}{1 - p * \left(r \bmod \frac{1}{p}\right)} \quad \forall n \in G$$

$$T(n) = 0 \quad \forall n \notin G \quad (1)$$

with p as the cluster-head probability, r as the number of the current round and G as the set of nodes that have not been cluster-heads in the last $1/p$ rounds. This algorithm ensures that every node becomes a cluster-head exactly once within $1/p$ rounds.

In LEACH, the cluster head (CH) nodes compress data arriving from nodes that belong to the respective cluster, and send an aggregated packet to the base station in order to reduce the amount of information that

Self-Choreographed Musical Fountain System

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Abstract - Self-choreographed musical fountain is a novel idea and aims to reduce design complexity of pre-choreographed musical fountains by automatically synchronizing water with random input music, depending on musical information retrieval characteristics of the song. In this paper, a novel algorithm developed for a self-choreographed, fully automatic, interactive musical fountain system is discussed. System design follows a modular approach. Python language is used to develop the software architecture for the system. A prototype is designed to test the system. System provides satisfactory results for various genres of music.

Keywords - Chord Changes; Feedback System; Music Information Retrieval (MIR); SCPGA; Segmentation; Self Choreographed Musical Fountain

I. INTRODUCTION

Fountain is an architectural piece which jets water into air to produce a dramatic effect. Fountains are used today to decorate city parks, hotels and offices for entertainment and attraction. Musical fountain is achieved by synchronizing light and water jets to the beats of music to produce a theatrical spectacle. Earlier, musical fountains were controlled manually by an operator, who regulated pump, valves and light by using a switchboard. Currently, most musical fountains available are pre-choreographed to sync water, lights with the music played. Once such fountains are setup, the choreographed routines are hardly changed. This repetitive nature is the reason for the poor audience attending these musical fountain shows. Pre-programmed musical fountain is a complex system, requiring trained and skilled personnel. To improve such musical fountains, a self-choreographed musical fountain system is proposed. Self-choreographed musical fountain system reduces maintenance and saves time. Research in this field has resulted in several computer aided simulation systems [1]. Self-choreographed fountains have been implemented using FFT, to turn on valves corresponding to

different frequency ranges in music. This doesn't truly capture the essence of music. The proposed system allows the user to input songs through a graphical user interface (GUI). The song is segmented according to location of chord changes. Various MIR [2] parameters are extracted for every segment, using Essentia. Suitable patterns are selected from the database using proposed algorithm and corresponding signals are sent to the valves and servos. Pipeline pressure is regulated using a feedback system. The rest of this paper is organized as follows. In section II, the system design approach is discussed. Section III and IV provides an overview of implementation stages. In section V, experimental results and performance of the fountain are presented. Finally, conclusions and possible future work directions are given in section VI.

II. SYSTEM DESIGN

Proposed system depicted in Figure 1, takes input in form of audio files, through the GUI which provides necessary controls. The audio file is segmented, according to chord changes [3], [4]. For each segment, MIR Parameters such as danceability [5] and duration are computed. Suitable sequence of water jets is selected from the pre-defined pattern database based on extracted MIR parameters, using proposed algorithm. Corresponding signals are then sent to valve driver board and servo controller. Valve driver board is responsible for switching of the solenoid valves, which controls the flow of water through the nozzles. Servo drive controls movement of servo motors. Pressure sensor is used to provide feedback to the pump, to maintain required pressure in the header, by varying the speed of the pump, using TRIAC based motor controller circuit which controls the AC power given to the pump [6].

Analysis for the Detection of Diabetic Retinopathy using Various Classifiers

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Abstract - Diabetic retinopathy is caused due to damage in the retinal part of the eye. Diabetic patients have more content of glucose in the blood. Complications of diabetes can lead to blindness. It is one of the main causes for the visualization threatening in the developed world. Early detection of the disease can direct to effective treatment. Retinal images are collected from online available datasets. After preprocessing retinal images are undergone through watershed segmentation process. Features were extracted using GLCM matrix. Student's t-test is used for feature selection process. Various classifiers like SVM, KNN, Random forest, Random tree and Naive Bayes were used for the classification purpose. Obtained accuracy for SVM with 100 %, KNN with 95 %, Random forest with 95 %, Random tree with 95 % and Naive Bayes with 91.5 % by this method.

Keywords - Diabetic retinopathy; exudates ; preprocessing ;retinal images.

retinopathy belong to the category of early diabetic retinopathy. Proliferative diabetic retinopathy comes under advanced diabetic retinopathy. Generally there will be no early symptoms in the retinal images. But after the disease progresses, there will be changes in the retinal images and which show new symptoms in the images [2]. Content of glucose in the blood will be more for the diabetic patients [3]. In the Fig. 1, it shows healthy retina and in Fig. 2 the retinal part of eye having diabetic retinopathy. Symptoms of the disease could not find in patient's upto some advanced stages [4]. So the automated system can help to detect the disease without the help of medical professionals. In the time of mass screening, the automated system will be helpful to identify the disease in proper way.



Figure 1: Healthy retina

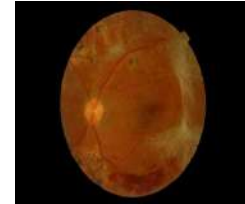


Figure 2: Retina having diabetic retinopathy

I. INTRODUCTION

Diabetic retinopathy is retinopathy (damage to the retina) due to complications of diabetes, which can ultimately lead to blindness. Analysis of NHANES (National Health and Nutrition Examination Survey) found that the estimated prevalence of diabetic retinopathy and vision frightening diabetic retinopathy was 28.5 % and 4.4 % for US adults with diabetes 40 years and older for the year 2005-2008 [1]. By 2030, the people with diabetic retinopathy will grow to 191 million even though 126.6 million in 2010 [1].

Changes in retinal blood vessels caused the common diabetic eye diseases [2]. Diabetic retinopathy is of different types – early diabetic retinopathy and advanced diabetic retinopathy. Mild nonproliferative diabetic retinopathy (NPDR), moderate nonproliferative diabetic retinopathy and severe nonproliferative diabetic

II. METHODS

Retinal images are taken from publically online available datasets and retinal screening centre. Retinal images are given for preprocessing [2] and steps are as shown in Fig. 3.

In preprocessing green component of the retinal images are extracted [2]. This extracted component is subjected to image segmentation. Watershed transformation tool is used for the image segmentation purposes which detects the exudates [2]. After the exudates are detected, it has to go through the feature extraction algorithm for the extraction of features. With the features extracted, it has to classify using different classifiers. Classifiers detect the retinal images into normal or abnormal retinal images.

FPGA Implementation of QAM Receiver with RLS Equalizer

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Abstract - Rayleigh fading is a statistical model for the effect of a propagation environment on a radio signal, such as that used by wireless devices. The M state QAM contains M possible states for the signal. It can transmit k bits of information during each symbol period. The binary data stream is pre-processed before the modulation process. Then it performs a bit-to-symbol mapping. Binary data is then gray coded and then modulated by modulator. The modulated signal is up-sampled and filtered by square root raised cosine filter in the transmitter. Due to the channel the signal transmitted gets corrupted by the disturbances present in it. Further the received signal is filtered by the square root raised cosine filter to remove a portion of the signal in account for the filter delay in order to make a BER comparison. At receiver the signal received is down sampled and equalized by the RLS equalizer. The filtered signal is demodulated to obtain the transmitted signal. The expected results are verified with the chip scope results by using kintex-7 kit.

Keywords - Equalization ; RLS algorithm.

I. INTRODUCTION

While developing the systems for communication the available permissible power, inherent noise level of the system and bandwidth are the important constraints which is to be considered. The digital modulation techniques are preferred more when compared to the analog modulation techniques because of the error free capability. The performance of M-QAM over Rayleigh fading channel model and additive white Gaussian noise channel model depends on effective channel equalization technique [1]. Inter symbol interference (ISI) could be a limiting factor in several communication systems. In order to satisfy the higher demand for quality of services, the wireless communication systems require larger data transmission rates. Most papers deal with those variants characterized by an algorithm. However, such algorithms asymptotically behave as the standard RLS so

that adaptivity is lost in the long run [2]. It is possible to transmit more number of data by choosing higher order of modulation schemes. To attain high-speed reliable communication, channel estimation and equalization are necessary to beat the effects of ISI [3].

II. QUADRATURE AMPLITUDE MODULATION

The Quadrature Amplitude Modulation or QAM is a form of modulation which is used widely for modulating the data signals onto a carrier which is used for radio communications. It is widely used because of its advantages over other forms of data modulation schemes such as Phase Shift Keying (PSK), Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK). The QAM is a signal in which two carriers shifted by 90 degrees in-phase are modulated which results in the variations of both phase and amplitude. In view of the fact that both phase and amplitude variations are present it can also be considered as mixture of phase and amplitude modulation [1]. In 16 QAM, there are four In-phase values (I) and four Quadrature values (Q), which results in 16 possible states or the voltage levels for the signal. It can transmit four bits of information per symbol which consists of two bits for I and two bits for Q.

III. DATA TRANSMISSION

The figure 1 describes the processing of binary data stream using a communication system which consists of modulator, pulse shaping filter, channel, root raised cosine filter and demodulator.

Raspberry Pi based XY Plotter

Design and Development of a Raspberry Pi Controlled 2-D Plotter

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Abstract—A Printed Circuit Board (PCB) mechanically supports and electrically connects electronic components using conductive tracks and pads etched from copper sheets laminated onto a non-conductive substrate. The conventional PCB design involves obtaining a circuit schematic on paper and then imprinting it on a copper plate by the application of heat known as thermal transference. However, this method leads to high consumption of power due to a use of heating element. This paper describes an electro-mechanical system which plots the 2-D data or image with lower power consumption and better accuracy. The result of PCB plotted by the system maintained the accuracy of an image and the final etched PCB had no breaks in paths and showed proper continuity. Further, the system was made to plot complex image of house at minimum speed showing high details of an image.

Keywords—2-D Data or Image; Accuracy; Electro-mechanical System; PCB; Power Consumption

I. INTRODUCTION

The XY Plotter is a device used to plot two-dimensional data on a rectangular coordinate system. The 2-D data or image is plotted by controlling the motion of a pen or marker along the axes with the help of stepper motors. Commercially available stepper motors provided adequate resolution and torque while being cost effective. Preferred mechanisms for lateral movement of tool were either lead screws or telescopic sliders. The Telescopic sliders is chosen as the bearings ensured smooth movement. Frictional forces involved in the system can be ignored as plotting functions require less to no friction [1]. The pen contact is controlled via a low power, compact mechanism that can be a servo motor, electromagnet etc. The use of servo motor whose rotation causes linear displacement of the marker and results in the pen tip being touched to or elevated from the plot surface. Any image to be plotted has to be converted into a G-code. G-code is a Computer Numerical Control(CNC) language that specifies the linear motion of the pen in terms of coordinate values. These values are to be

converted to digital signals by a secondary system to rotate the steppers. To convert this rotation to linear motion we use a belt and pulley system. The motor axle rotates the pulley causing linear motion of the belt due to the teeth interlock of said pulley and belt. The Raspberry Pi 3 controls the entire operation of a system. The code is written in python language which is processed by Raspberry Pi for decoding coordinate values from G-code file into control signals for secondary system. The Raspberry Pi was chosen as the control unit of the project for its high clock speed and easy upgradability when compared to the usual choice, the Arduino. The Pi also provides a Graphical User Interface(GUI) via third party software.

A. Objectives

The objectives are defined by research of commercial CNC plotters and available PCB etching methods. The MakeBlock XY Plotter Robot Kit is taken as a reference for cost comparison. The ironing method to imprint the PCB onto a copper plate is the reference for power consumption and time comparison.

Hence, the objectives were to:

- Reduce implementation cost.
- Reduce power consumption for the same circuit to be imprinted.
- Reduce time required for imprinting.
- Plot with a good level of accuracy.

II. SYSTEM DESCRIPTION

The XY plotter base is a 2-ft × 2-ft piece of half an inch-thick plywood. Three 16-inch Telescopic Slides are used in total for axis control. Two telescopic slides are used for the Y-axis and are fixed to the frame. Slight elevation is provided to them using a piece of aluminum window frame for each slide. The X-axis slide ends are fixed to the moving part of the Y-axis slides. This arrangement provides a work area of 10×12 sq. inch. The marker or pen holding mechanism is placed on the moving part of the X-axis slide. This mechanism controls when the marker should or should not touch the plotting surface. Now, displacement of X-axis slide moves marker

Application of Artificial Neural Network in Software Defined Networks

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Abstract— This paper deals with leveraging Machine Learning to manage FLOW CONTROL in Software Defined Networks. SDN specification requires signaling between Control and Data plane for creation of New Traffic Flows. This paper recommends use of Artificial Neural Network(ANN) based learning function to train itself from the flow creation patterns. Once trained to required confidence levels the ANN could apply autonomous flow creations thus reducing the signaling requirements and reduce provisioning times

Keywords— Open Networking, Artificial Neural Network, Flow control and creation

I. INTRODUCTION

Multiple approaches to Software Designed Networks have been adopted by Open Source group. This paper makes certain generic assumptions on Open Networking approaches and best effort has been put in to keep the concept presented generic in nature and adoptable across implementations.

This paper referees to and uses Concepts from Open Virtual Switch, ONF(Open Network Foundation) specifications. Brief understanding of the above specification is recommended.

In a flow based networking architecture, consider a new packet stream arriving at the data plane on the ingress network interface. The open flow specifications make the following recommends in

regard to how the data plane handles the new session.

1. If incoming packets match the criteria(s) that exists in the flow table, the data plane executes the instructions associated to the flow in the action table. These actions could be like to modify the header, set Virtual LAN, MPLS (Multi Protocol Label Switching) Tags and reschedule the packet for transmission at the designated port. It is assumed such matches mostly use minimal criteria much similar to the general provisioning rules. Such methods could be used to create macro flows. However if micros flows needs to be created and managed a deeper inspection and a more accurate provisioning could be required much closer to customized provisioning.

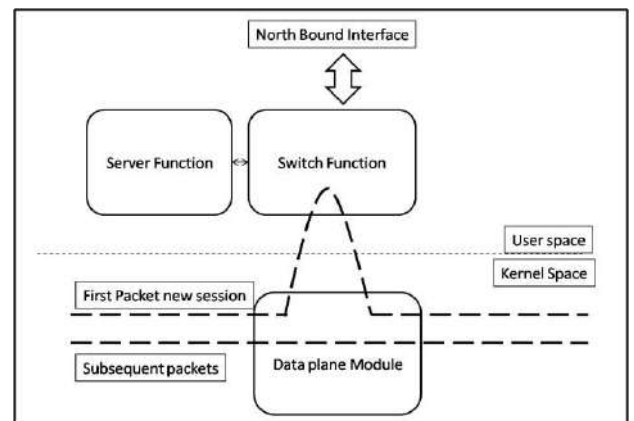


Fig.1 Packet flow in Open Networking Architecture

A Novel Content Based Image Retrieval Using Variance Color Moment with SAD Method

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Abstract—The increase in bandwidth availability to access the internet in the near future will allow the users to search for and browse through video and image databases located at remote sites. Fast retrieval of images from large databases is necessary. Content Based Image Retrieval (CBIR) has therefore evolved into necessity. In this work, CBIR based on the primitives of color moments is used. The image is divided into four segments and the color moments of all the segments are extracted and clustered into four classes. At the next stage the mean moments of each class is considered as the primitive of the image. All the primitives are used as features and each class mean is merged into a single class mean. The distance between the input query image mean with the corresponding database images are calculated by using SAD method.

I. INTRODUCTION

In the last few years, the rapid growth of the internet has enormously increased the number of image collections available. The accumulation of these image collections (including art works, satellite and medical imagery) is attracting more and more users in various professional fields such as Publishing, fashion, geography, medicine, architecture, advertising and design. Meanwhile, the study of image retrieval which is concerned with effectively and efficiently accessing desired images from large and varied image collections has become more interesting and more challenging.

Image retrieval is concerned with techniques for storing and retrieving images both efficiently and effectively. In early image retrieval methods, the desired image is achieved by matching the keywords that are assigned to each image manually. Over the past few years, many advanced techniques have been evolved in Content-Based Image Retrieval (CBIR) systems. Applications like art, medicine, entertainment, education, manufacturing, etc, make use of a vast amount of visual data in the form of images. This envisages the need for fast and effective retrieval mechanisms in an efficient manner. In recent years, CBIR systems will be based on features like color, shape, texture, spatial layout, object motion, etc. Among all the visual features, color is the most dominant and distinguishing one in almost all applications.

CBIR system involves a number of critical areas where research is needed, including data representation,

features extractions and indexing, image query matching and user interfacing.

A. Color Moments Origin Primitives

The first order (mean), the second order (Variance) and the third order (skewness) color moments have been proved to be efficient in representing color distribution of images [12].

The first three moments are defined as:

Moment 1: It is called Mean. It provides average Color value in the image.

$$\mu_i = \frac{1}{N} \sum_{j=1}^N f_{ij} \quad (1)$$

Moment 2: It is called Standard Deviation. The standard deviation is the square root of the variance of the distribution.

$$\sigma_i = \sqrt{\frac{1}{N} \sum_{j=1}^N (f_{ij} - \mu_i)^2} \quad (2)$$

Moment 3: It is called Skewness. It gives measure of the degree of asymmetry in the distribution.

$$s_i = \sqrt[3]{\frac{1}{N} \sum_{j=1}^N (f_{ij} - \mu_i)^3} \quad (3)$$

A wide range of possible applications for CBIR technology has been identified Potentially fruitful areas include:

Crime prevention The military Intellectual property Architectural and engineering design Fashion and interior design Journalism and advertising Medical diagnosis Geographical information and remote sensing systems Cultural heritage Education and training Web searching.

Three commercial CBIR systems are now available. They are, IBM's QBIC, Virage's VIR Image Engine, and Excalibur's Image Retrieval Ware. In addition, demonstration versions of numerous experimental systems can be viewed on the Web, including MIT's Photo book, Columbia University's Web SEEK, and Carnegie-Mellon University's Informedia. CBIR systems are beginning to find a foothold in the marketplace; prime application areas include crime prevention (fingerprint and face recognition), intellectual property (trademark

Offline Handwritten Kannada and English Numeral Recognition Using Wavelet Transforms

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Abstract—This paper presents an OCR (optical character recognition) system for the handwritten Kannada Characters. A lot of work has been done in recognition of characters and numerals of various languages like Chinese, Gurmukhi and Arabic etc. But in case of handwritten Kannada and English script very less work has been reported. The feature can be extracted using Wavelet Transform. The feature set also contains the zonal densities of different zones of an image. In Database, 40 to 10 samples of each numeral character have been used. The character can be classified using Classifier.

Keywords: Optical Character Recognition, Handwritten Gurmukhi Script, Wavelet Transforms, Feature Extraction, Zonal Densities

I. INTRODUCTION

Handwritten character recognition is a hot research area in pattern recognition. Character recognition is a process of converting an image of a handwritten or printed text in to a computer editable format.

Handwritten character recognition is of two types:

- Online handwritten character recognition.
- Offline handwritten character recognition.

In online handwritten character recognition the character is recognized as soon as it has been written. On the other hand, in offline handwritten character recognition the character has been written first, and recognition has been performed later on. In this paper the offline character recognition has been performed for the Kannada numerals. The recognition of handwritten characters is very difficult. There are many external and internal problems which are present in an OCR system for handwritten characters. The external problems are related to the variation in the shapes of characters and writing styles of different writers. There is a possibility of wrong recognition due to similarity between different characters. The internal problems in an OCR system are related to the distortion in the character images during scanning of images, addition of noise during image acquisition and degraded and broken characters images.

Aim: The aim of the project is to develop a framework for character recognition using Wavelet Transform.

Problem Statement: The aim of the project is to develop a framework for character recognition using Wavelet Transform. Various types of classifiers are K-nearest neighbour, Back propagation neural network, Support Vector Machine etc are used to classify the character.

Previous Related Work: Now days, there are software's for recognizing only the English characters. It recognizes and stores the characters in ASCII format. Optical character recognition, usually abbreviated to OCR, is the mechanical or electronic translation of images of handwritten, typewritten or printed text (usually captured by a scanner) into machine-editable text.

In about 1965, Reader's Digest and RCA collaborated to build an OCR Document reader designed to digitize the serial numbers on Reader's Digest coupons returned from advertisements. The fonts used on the documents were printed by an RCA Drum printer using the OCR-A font. The reader was connected directly to an RCA 301 computer (one of the first solid state computers). This reader was followed by a specialized document reader installed at TWA where the reader processed Airline Ticket stock. The readers processed documents at a rate of 1,500 documents per minute, and checked each document, rejecting those it was not able to process correctly. The product became part of the RCA product line as a reader designed to process "Turn around Documents" such as those utility and insurance bills returned with payments.

The United States Postal Service has been using OCR machines to sort mail since 1965 based on technology devised primarily by the prolific inventor Jacob Rabinow. The first use of OCR in Europe was by the British General Post Office (GPO). In 1965, it began planning an entire banking system, the National Giro, using OCR technology, a process that revolutionized bill payment systems in the UK. Canada Post has been using OCR systems since 1971.

In 1974, Ray Kurzweil started the company Kurzweil Computer Products, Inc. and led development of the first omni-font optical character recognition system—A computer program capable of recognizing text printed in any normal font. He decided that the best

Person Authentication using Iris Recognition

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Abstract - The biometric system provides identification of an individual based on unique feature possessed by the individual. It can be used to provide security for the users in various applications. Iris recognition is considered as one of the best biometric authentication method than the other biometric methods. The iris recognition uses the unique features that are present in the iris for recognition. The segmentation of the iris is done using Circular Hough transform. The feature extraction is performed using Log Gabor filter and the matching is done using Hamming Distance method. The performance of the iris recognition system depends on the recognition accuracy and time consumed. The iris recognition system is implemented using Matlab on Casia, Uiris and self eye images and their performance is evaluated. The Recognition accuracy for both Casia and Uiris eye image is 100% and that of self images is 40%.

I. INTRODUCTION

The biometric system is used for identifying the individual, based on the behavioral and physiological characteristics. The physiological biometric system uses retina, fingerprint, face, iris, voice and hand geometry for recognition. The behavioral biometric system uses dynamics of signature and keystroke and gait for recognition. The iris recognition is considered as the best recognition method because of its,

1. Uniqueness: The iris of every individual is unique.
2. Permanence: The iris remain unchanged lifelong.
3. Anti-falsification: It is difficult to steal or forge iris data.

The features present in the iris are used for recognition of a person. The iris features are distinct in every person, even in identical twins.

The iris is the circular colored portion present in the eye. The small circular region inside the iris is the pupil. The sclera is the white region around the iris.

The main application of iris recognition system is for security purpose. It is used to provide security in companies, government sector etc. The privacy of secret information is very essential, so the information has to be protected against theft or forgery. In such cases, there should be tight security from fraudulent users. The iris recognition can be used to allow access to authorized persons only and to protect the secret information.

The Advantages of iris recognition are, the accuracy of the system is high, the eye images are taken from camera and no contact with the device has to be made, it is user acceptable, the time taken for recognition is fast, the iris is safe from forgery unlike passwords, pin numbers etc.

The segmentation plays an important role in iris recognition. The iris is the information carrying part in the iris recognition, hence the iris has to be segmented from the eye image. The pupil and eyelids, eyelashes that are obstructing the iris should be removed.

The integro-differential operator is used by Daugman for the segmentation of iris [1]. It searches the entire eye image for maximum integral contour derivative value by increasing the radius in the smoothed partial derivative. The radius and centre points are obtained for the iris and pupil. The accuracy of this system is good, but the complexity in segmentation is more. For the feature extraction Gabor filter is used by Daugman, the Gabor filters provides best possible conjoint frequency. It performs phase quantization of the local texture information. The Gabor coefficients are computed to extract the textural data from the eye images. The template code can be obtained by computing the sign of the real and imaginary parts of the image. In the identification process,

Tomato Quality Evaluation using Image Processing

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Abstract— Tomato is one of the most popular fruit in the world. Day by day tomato consumption is increasing. Evaluating tomato maturity is to decide the ripeness and expiry of the tomato fruit. Color in tomato is the most important visible characteristic used to assess ripeness. The main factor of consumer intake is based on the color of the tomato. The image of tomato should undergo process like pre-processing, segmentation and then feature extraction. After feature extraction process, feature training and feature matching is done. In feature matching comparison of data images take place in order to get a ripened or a raw tomato. The proposed method gives structure feature as well as texture feature of the input image of tomato. The extracted features are compared by using Artificial Neural Network (ANN) and K-means clustering algorithm.

Index Terms—Artificial Neural Network (ANN), Color Coherence Vector (CCV), Local Binary Pattern (LBP), Quality Discriminant Analysis (QDA).

I. INTRODUCTION

Tomato are used in fresh form as well as processed from. Tomatoes are known as health stimulating fruit. The antioxidant properties of their main compounds help to prevent from diseases. Earlier the fruits were categorised and grading was done on experience & computer vision based. But this method had some errors. So to decrease this errors and failures human started to invent new methods. In this project, using various image processing algorithms we can evaluate the quality of tomato. For that main two features are extracted from the image of tomato. The most characteristic part of tomato is the color. So by seeing the color, half of the prediction can be done. Here proposing a method to extract the color feature and texture in order to find the maturity level of the tomato. The proposed methodology is explained in section II. Color feature extraction is done by using histogram method and Color Coherence Vector method and texture feature extracted using LBP method. The edge is detected using canny edge detector. The results from feature extraction are compared using ANN and K-means clustering algorithm. The results obtained for our experiments and their accuracy has been explained in section III. Section IV provides conclusive points and future scope.

II. PROPOSED METHODOLOGY

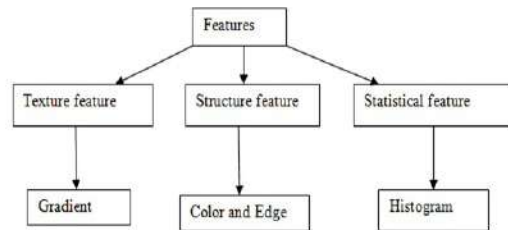


Fig. 1: Feature classification

The feature classification used for tomato evaluation is shown in figure 1. In statistical feature histogram is found for evaluation. Color histograms are used to compare images.

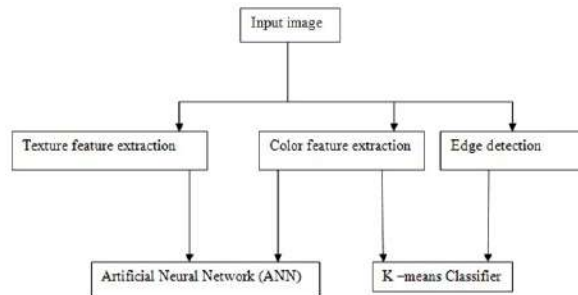


Fig. 2: Block Diagram

Figure 2 shows the basic block diagram of the project. The input image is the tomato image to be evaluated. The input image is taken from the data file. Data file consist number of images which is to be considered. The image is then pre-processed and segmented, then after removing noise



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Tomato Maturity Grading Using Image Processing

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Abstract - Tomatoes are in high demand because the world population consumes them daily. So the quality of the tomato is important. Tomato maturity grading means checking the ripeness level of the tomato. The major problem in tomato color grading by human vision was due to the subjectivity of human vision and error prone by visual stress and tiredness. The quality level of tomato is classified here into 3 grades, first grade (ripe tomato), second grade (half ripe tomato) and third grade (unripe or spoiled tomato). The image of tomato should undergo process like pre-processing, segmentation and then feature extraction and classification. The proposed method gives structure feature as well as texture feature of the input image of tomato. Color in tomato is the most important visible characteristic used to assess ripeness. Color and shape comes under structure feature extraction. In the proposed method color feature is extracted using color histogram method and Color Coherence Vector (CCV) method. Shape can be detected using edge detection algorithm. Texture feature extraction is done by using Local Binary Pattern (LBP) method. The extracted features are given to an Artificial Neural Network (ANN), CCV and edge detection features given to K-means classifier. Feature matching process is done in ANN and K-means. The extracted features can be compared and classification comparison is done in terms of efficiency.

Keywords - Artificial Neural Network (ANN); Color Coherence Vector (CCV); Local Binary Pattern (LBP); Quality Discriminant Analysis (QDA).

I. INTRODUCTION

Tomatoes are in high demand because day by day the consumption increases. The antioxidant property of tomatoes prevents humans from diseases. The main characteristic component of tomato is its red color. So in older days, human depends upon its vision qualities to distinguish between ripen half ripe and unripe fruits for daily intake. But to differentiate the tomatoes ripe or unripe, consider color feature and texture feature. Otherwise the result may wrong. So to decrease the failure image processing algorithms are used. In this project, various image processing algorithms are proposed to evaluate the quality of

tomato. In the proposed method two features are extracted from the input image of tomato. One is structure feature extraction which includes color shape and information about edges and the other one is texture feature extraction which gives the information about the surface. By using feature matching algorithm and classification method images are compared and hence evaluation is done. The input image of tomato is pre-processed, segmented and feature extraction takes place. The extracted features are given for feature matching and classification is done. The proposed methodology is explained in section II. Color feature extraction is done by using histogram method and Color Coherence Vector method and texture feature extracted using LBP method. The edge is detected using canny edge detector. The results from feature extraction are compared using ANN and K-means clustering algorithm. The results obtained for our experiments and their accuracy has been explained in section III. Section IV provides conclusive points and future scope.

II. PROPOSED METHODOLOGY

Figure 1 shows the block diagram of the proposed method. The input image is the self tomato image which is to be evaluated. Data file consist number of images which is pre-processed and segmented, then after removing noise feature extraction takes place. The tomato is classified into 3 grades based on their ripeness level. First grade ripen tomato (red color), second grade half ripen tomato (orange color and light red color) and third grade unripe tomato (green or yellow color).

(A) Structure Feature Extraction

The most characteristic part of tomato is the color. Color feature extraction is done by using Color histogram method and Color Coherence

Securing Patient Medical Information Using Image Steganography

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ABSTRACT

Medical records are extremely sensitive patient information and require an uncompromising security during both storage and transmission. In this paper a multi secure steganography and cryptography based method is discussed for securing the patient information. The method provides an efficient transmission and storage security mechanism for the protection of patient information like baby fetus details, brain disease details and patient's identity information inside their medical image files viz. scan images or MRI images using the idea of obscurity. The image into which the patient information is hidden is the carrier image or original image and the patient information is the secret data to be embedded on to the cover image. There exists a large variety of steganographic techniques having unique advantages and disadvantages. But the challenge of the attacker is to find the positions where the message is embedded. If the embedding positions are randomly chosen, it will be difficult for the attacker to find out the positions. In this work the steganography technique uses Diffie Hellman key exchange cryptographic algorithm to find out the random positions in the cover image at which the secret patient data is to be embedded. The cover image carries the secret message, this secret message is encrypted using RSA algorithm before embedding it on to the cover. At the receiver, the message is extracted using the reverse of the embedding process. Simulation results show the method exhibits good performance in terms of robustness and imperceptibility.

Keywords: Diffie Hellman key exchange; RSA algorithm.

1. INTRODUCTION

One of the major concerns in the world today is making high quality health care available to all. In recent times, with the increasing use of networking services, various government and private medical organizations are continuously migrating into the cloud environments. Hence, this kind of system need large scale data centres for storage of medical data. Telemedicine is the remote delivery of healthcare services, where health

assessments or consultations, are provided over the telecommunications infrastructure. It allows healthcare providers to assess, diagnose and treat patients without the need for an in-person visit. In store-forward version of the telemedicine, the medical image or lab results along with the patient data which are transmitted from remote places is examined by the health care provider or the doctor. While the recent advances in technology allows to access, medical images and the data that are transmitted from remote places, security parameters such as authentication, integrity, confidentiality must to be taken care. However, the notion of security is of major concern whenever sensitive patient information like baby fetus details or any other patient medical details is being transmitted.

Several architectures for secure storage and transmission of medical records and patient identification information have been proposed, that involve maintaining and sharing medical records and databases. Most of these architectures rely on some type of cryptography. Cryptographic methods encrypt the patient medical information with a password and assume that only authorized parties have access to the password. While this does work generally, most of the time, the encrypted records are prone to security thieves, who could decipher sensitive patient information like the patients insurance service provider, medication history, etc.

Steganography provides an alternative choice to this problem, which is hiding the very existence of sensitive data by concealing the data in a carrier. The objective of image steganography is to hide secret information in the carrier image such that the changes made to the image are imperceptible, and the secret information itself is retrievable only by the authorized users [1]. The advantage of steganography is that it keeps the presence of data secret.

Section 2 describes the methodology for encryption and decryption using RSA algorithm and Diffie Hellman

Medical Image Steganography for Securing Patient Information

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Abstract—Medical records are extremely sensitive patient information and requires an uncompromising security during both storage and transmission. In this paper a multi secure steganography and cryptography based scheme is proposed to secure the patient information. The proposed technique provides an efficient transmission and storage security mechanism for the protection of patient information like baby foetus details, brain disease details and patient's identity information inside their medical image files viz. scan images or MRI images using the idea of obscurity. The image into which the patient information is hidden is the carrier image or original image and the patient information is the secret data to be embedded on to the cover image. In this work the steganography technique uses Diffie Hellman key exchange cryptographic algorithm to find out the positions of the cover image in which the secret patient data is to be embedded. The cover image carries the secret message, this secret message is encrypted using Rabin cryptosystem before embedding it on to the cover. At the receiver, the message is extracted using the reverse of the embedding process. Simulation results show the method exhibits good performance in terms of robustness and imperceptibility.

Keywords- Cryptography, Diffie Hellman key exchange , Embedding ,Extraction, Steganography.

I. INTRODUCTION

One of the major concerns in the world today is making high quality health care available to all. In recent times, with the increasing use of networking services, various government and private medical organizations are continuously migrating into the cloud environments. Hence, this kind of system need large scale data centres for storage of medical data. Telemedicine is the remote delivery of healthcare services, where health assessments or consultations, are provided over the telecommunications infrastructure. It allows healthcare providers to assess, diagnose and treat patients without the need for an in-person visit. In store-forward version of the telemedicine, the medical image or lab results along with the patient data which are transmitted from remote places is examined by the health care provider or the doctor. While the recent advances in technology allows to access, medical images and the data

that are transmitted from remote places, security parameters such as authentication, integrity, confidentiality must to be taken care. However, the notion of security is of major concern whenever sensitive patient information like baby foetus details or any other patient medical details is being transmitted.

In recent years, several architectures for secure storage and transmission of medical records and patient identification information have been proposed, that involve maintaining and sharing medical records and databases. Most of these architectures, rely on some type of cryptography. Cryptographic methods encrypt the patient medical information with a password and assume that only authorized parties have access to the password. While this does work generally, most of the time, the encrypted records are prone to security thieves, who could decipher sensitive patient information like the patients insurance service provider, medication history, etc.

Steganography provides an alternative choice to this problem, which is hiding the very existence of sensitive data by concealing the data in a carrier. The objective of image steganography is to hide secret information in the carrier image such that the changes made to the image are imperceptible, and the secret information itself is retrievable only by the authorized users. The advantage of steganography is that it keeps the presence of data secret. There are several Steganographic techniques for hiding a variety of multimedia secrets within different types of multimedia files. Least significant bit (LSB) substitution algorithm [3] is one of the simple techniques that hides a secret message in the LSBs of pixel values without perceptible distortions. However, the robustness provided by this method is low which means the hidden data can be easily destroyed by simple attacks. Transform domain techniques are found to be more robust[4]. The carrier is altered to transform domain using Discrete Cosine Transform and Discrete Wavelet transform and then the secret data is embedded on to the tranform domain host. In these methods the information can be easily extracted using



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An Efficient Steganography with Mosaic Image for Secure Communication

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Abstract -Paper deals with the creation of a new type of computer art image called the secret fragment visible mosaic image, which contains small fragments of secret image. The preliminary mosaic image is created by dividing the secret image into fragments called tile images and embedding them into the target image based on the image similarity measure between the tile image and target blocks. The Preliminary mosaic image is the result of fitting secret blocks into the target blocks based on the block similarity measure between secret and target blocks. The similarity between secret and target blocks is obtained using h-feature. The information of the secret block fitting sequence is embedded into the preliminary mosaic image using Lossless LSB replacement technique. This information is required to recover the original secret image. The image obtained after the process of embedding is called mosaic image. The receiver first recovers the secret block fitting sequence from the mosaic image and this information is used to retrieve the original secret image

Keywords - Secret fragment visible mosaic image; Lossless LSB replacement technique; h-feature.

I. INTRODUCTION

Images are frequently acquired from various sources and transmitted via internet for several applications such as, medical applications, banking applications and military applications. These images have to be protected against attack as they contain private or confidential information. Several techniques are proposed for secure image transmission. The two most common approaches for secure image transmission are image encryption and data hiding. Image encryption utilize the natural property of an image, such as strong spatial correlation and high redundancy, to get an encrypted image based on Shannon's confusion and diffusion properties [1]. The encrypted

image is a scrambled image that no one can figure out the secret image without the exact key. However, an encrypted image is a meaningless image, which does not provide any additional information before decryption. Due to the scrambling effect in the encrypted image it may provoke an attacker's attention to hack the image. An alternative to avoid this problem is data hiding technique that hides secret data into a target image so that no one can realize the existence of the secret data. The techniques involved in the data hiding methods are LSB substitution [2], histogram shifting [3], difference expansion [4], prediction error expansion [5], discrete cosine transformation [6] and discrete wavelet transformation [7]. The main issue in the data hiding technique is the difficulty to hide a large amount of secret data into the target image. If the size of secret image is same as that of target image then the secret image has to be compressed in advance, if one wants to hide it into the target image. But, such compression of data is highly impractical for transmitting images that are valuable such as legal documents, medical images, military images etc.

To overcome the difficulty of hiding large amount of secret data into target image a new technique called secret fragment visible mosaic image [8] is proposed, which contains small fragments of a given secret image.

Several data hiding techniques are proposed but they incorporate lossless data compression stage [9, 10]. There are some techniques that does not rely on data compression stage, but the embedding capacity is low [11]. An adaptive LSB substitution technique [12] is proposed for data hiding. The technique analyzes brightness, texture mapping and area of the edges to embed the secret data into target image. The secret data is embedded into the LSB of target image. The total number of bits available to embed the secret data into the target image is represented as 'L'. At non sensitive image area the value of L is high, whereas the value of L is low at sensitive image region. The high embedding capacity is

Analysis of BER Performance of different Channel Estimation Algorithms in OFDM Systems

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Abstract - Orthogonal Frequency Division Multiplexing (OFDM) provides an effective transmission over frequency selective fading channels, eliminating Inter Symbol Interference (ISI). This technique has gained a lot of interest in mobile communication research, as the radio channel is usually frequency selective and time variant. Channel estimation is required to properly recover the transmitted signals with minimum error. To obtain the channel state information, training OFDM symbols or pilot symbols are transmitted along with the OFDM symbols. Pilot symbol aided channel estimation is especially attractive for wireless links, where the channel is time varying. Channel estimation of OFDM systems is done using block type pilot insertion, where pilot symbols are inserted into all the subcarriers for channel estimation. Bit Error Rate (BER) performance of channel estimation is analyzed using three different algorithms, Least Square (LS) algorithm, Minimum Mean-Square Error (MMSE) algorithm and Singular Value Decomposition (SVD) algorithm. The BER performance of three algorithms are plotted using MATLAB. The BER plot concludes that the performance of the MMSE estimator is better than LS estimator. SVD estimator is the simplified version of MMSE and its performance is almost similar to MMSE in case of low Signal to Noise Ratio (SNR).

Keywords - Block type pilot insertion; ISI; LS; MMSE; OFDM; SVD.

I. INTRODUCTION

The major goal of the wireless communication is to provide communication at high data rates. The high data rate transmission reduces the symbol period because symbol period is the inverse of the data rate. In a wireless environment transmitted data reaches the receiver through multiple paths. When a shorter symbol period transmitted over the multipath channel, leads to a greater chance for Inter Symbol Interference (ISI). This occurs when a delayed version of symbol arrives during the processing period of symbol next symbol. The ISI can be reduced with longer symbol period, by introducing a multicarrier transmission technique. The multicarrier transmission is

achieved by Orthogonal Frequency Division Multiplexing (OFDM), which divides high rate data streams into parallel low rate data streams with long symbol duration, eliminating ISI. The multiple subcarriers are orthogonal to each other for achieving efficient utilization of the bandwidth. To recover the transmitted data without much error the channel effect on the signal must be estimated.

Channel estimation plays an important role in OFDM systems. The channel characteristic is estimated by sending a known symbols called as pilot symbols. Pilot based channel estimation estimates the channel information by obtaining the impulse response from all sub carriers by pilot.

To obtain the channel information, pilot symbols are inserted in the transmitted data from the transmitter, and the receiver gets the channel information by using pilot symbols received. The block type pilot-based channel estimation is performed, where the OFDM channel estimation symbols are transmitted periodically, and all subcarriers are used as pilots. The receiver uses the estimated channel conditions to decode the received data inside the block until the next pilot symbol arrives. The performance of the channel estimation is analyzed with three different algorithms Least Square (LS), Minimum Mean-Square Error (MMSE) and Singular Value Decomposition (SVD). The Bit Error Rate (BER) performance of the three algorithms are plotted and analyzed.

II. OFDM SYSTEM MODEL

The block diagram of a baseband OFDM system is shown in Figure 1.

Low cost Gesture controlled Prosthetic Hand

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Abstract—People who lose their limbs suffer from psychological and physical difficulties due to their inability to use the extremities. They depend on others to help them in their daily activities. Advancement in technology has improved their abilities, independence and overall quality of their life. One such advancement is Prosthesis. Prosthesis is an artificial approach, used to replace a disabled body part. It helps the disabled in acquiring the functional replacement for their disabled body part by typically providing supplement to defective body parts.

The main purpose of the project is to design a low cost and user convenient prosthetic hand for the disabled. The simple construction and low cost of materials, as well as the use of common devices such as smartphones, enable the amputees to gain access to prosthesis with ease.

Keywords—*smartphone; Android; hand gestures; low cost*

I. INTRODUCTION

Prostheses are artificial substitutes that replace missing or lost parts of the body. There are many different artificial replacements for body parts available now for instance; heart valves, teeth, arteries and joints can be replaced by artificial parts, which are then called prostheses. However, the artificial components that are most commonly regarded as prostheses are those that replace limbs. The human hand is a powerful tool for sensing and operating in the environment, as well as a very sophisticated means for physical and social interaction. It allows the human beings to accomplish sophisticated movements, from power to precision tasks, owing to the large number of Degrees of Freedom and the paramount role played by thumb opposition. Voluntary motor commands accounts for a large amount of proprioceptive and exteroceptive information and are translated into neural and muscular activity to actuate the limb, owing to the skeletal structure. The hand is very important for social interaction and establishes the frontiers between what belongs to the self and what belongs to the environment. Hand loss can be perceived

as a devastating damage since it affects the level of autonomy, limiting the capability of performing working, social, and daily living activities.

II. LITERATURE REVIEW

The author Steven den Dunnen in the paper titled “The design of an adaptive finger mechanism for hand prosthesis”, various mechanisms of the finger and variable force transmission were designed after which one of each was conceptualized. A prototype of the finger was made and evaluated. This resulted in the design of two improved fingers, of which one was made twice. The three prototypes were combined in to one hand, which was tested to grasp several objects of daily living. The outcomes were promising, as the mechanism appeared to function as intended [1].

In the paper titled “Design and Implementation of a Wireless Gesture Controlled Robotic Arm with Vision” by Varnika Gaur, *et al* authors designed a system which was basically an accelerometer based system which controlled a Robotic Arm wirelessly using a small and low-cost, 3-axis accelerometer via RF signals. The Robotic Arm was mounted over a movable platform which was controlled wirelessly by another accelerometer. One accelerometer was attached on the human hand, robotic arm captured its behavior (gestures and postures) to move accordingly and the other accelerometer was mounted on the leg of the user whose gestures and postures moved the platform accordingly [2].

In the paper “Implementation of a Wireless Gesture Controlled Robotic Arm” by Saurabh A. Khajone, *et al* authors’ idea was to change a perception of remote controls for actuating manually operated Robotic-Arm. They presented a thought and a way to eradicate the buttons, joysticks and replace them with the technique of controlling the complete Robotic Arm by the operators hand gestures. The electronics system they proposed recognized a particular hand gesture that will be performed in front of webcam. Matlab tool recognized

PERFORMANCE ANALYSIS OF COLOR IMAGE WATERMARKING USING DISCRETE WAVELET TRANSFORM

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Abstract—Rapid development in computer technology makes images, audio, text and video can be more easily reproduced, processed and stored in digital devices. Digital watermarking is a technique which allows an individual to add hidden copyright notices or other verification messages to digital audio, video, or image and documents. In this paper the concept of color image watermarking technique is performed (i.e., both Host Image and Watermark Image are color images), using DWT based algorithm. The performance metrics Peak Signal-to-Noise Ratio (PSNR) and Normalized Correlation (NC) is analyzed. In addition to the above analysis a robustness check is performed in a watermarked color image with an application of various attacks (Salt- Pepper Noise Attacks, Rotation (Clockwise), Blurring, Image Sharpening and Gaussian Noise) to illustrate the efficiency of the above algorithm.

Keywords— *Discrete Wavelet Transform (DWT), Mean Square Error (MSE), Peak Signal-to-Noise Ratio (PSNR) and Normalized Correlation (NC).*

I. INTRODUCTION

Image processing is one of the forms of signal processing, in which input is an image. In this technique image is considered as a 2-dimensional signal and standard signal processing techniques are applied to it. A digital watermarking is a process of embedding a marker such as audio or image. It is a technique providing copyright information in the images. Watermarks can be used to authenticate the signal which is carrying it or to identify its owners[2]. Embedding is an algorithm in which the watermark is embedded into the host image or the carrier signal. Extraction is an algorithm used to extract the watermark from the host image or the original signal. Extraction algorithm must be able to extract the signal even if the modifications to the watermarked image is strong, then it is called a robust digital watermarking. In order to check the

robustness of the algorithm, various attacks will be performed on it. If the watermark is extracted correctly, even after the attacks on the watermarked image, then the algorithm is called very robust. Discrete Wavelet Transform (DWT) is obtained by passing the signal through a series of digital filters[1]. Sub-sampling is a process in which the scaling operation changes the resolution of the image. It is a tool which separates the data into different frequency components. DWT uses factor 2 sub sampling. It is obtained by passing the signal through a series of filters.

II. DISCRETE WAVELET TRANSFORM

An image is represented as a two-dimensional array of coefficients in which coefficient represents the brightness level in that point. We can't make difference between coefficients having more important ones and lesser important ones. All most all natural images have smooth variations in color, having fine details being represented as sharp edges, between the smooth variations in the pixel values. The smooth variations in color are low frequency variations and the sharp variations are high frequency variations.

The low frequency components (smooth variations) constitute the base of an image, and the high frequency components (the edges which give the detail) show the refine image, it gives a detailed image. So, the smooth variations are of more importance than the details (edges). Separating the smooth variations and details of the image can be done in many ways, one such way is that decomposing of the image using a Discrete Wavelet Transform (DWT)[5]. A discrete wavelet transform (DWT) is any wavelet transform for which the wavelets are discretely sampled with wavelet



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This is to certify that Mr./Ms./ Praveen Kumar M from Department of Electronics and Communication Engineering, St, Joseph Engineering College, Mangaluru. has Presented the Research paper titled **PERFORMANCE ANALYSIS OF COLOR IMAGE WATERMARKING USING DISCRETE WAVELET TRANSFORM** and authored by Praveen Kumar M, A.Gandhimathinathan in the International Conference ICIRS 2015 at Bengaluru.

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Exploration of Grayhole Attack and its Performance Impact on Mobile Ad-hoc Networks

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Abstract—In Today's world, Mobile Ad-hoc networks (MANET) have grown as an important field of research interests for many researchers mainly because of its flexibility characteristics and wide applicability. But MANETs are exposed to many security challenges because it has no clear line of defence. Since MANETs are accessible by both legitimate users and malicious attackers, security has become a major concern because of the mobile feature of nodes and communication through openly shared wireless links. The grayhole effect on MANETs is explored and the evaluation of MANETs performance both with and without the grayhole effect is performed. Ad-hoc On-demand Distance Vector (AODV) is the routing protocol chosen for the performance evaluation of MANET. The effect of the Grayhole attack is concluded on the basis of the performance metrics such as the average packet delivery ratio and Throughput. NS2 will be used for simulation study for the approach.

Keywords—AODV, Grayhole Attack, Packet Dropping, MANETs

I. INTRODUCTION

A. Mobile Ad-hoc Networks

MANETs are networks, flexible in nature as they comprises of a set of mobile nodes. MANETs have no clear line of defence as they lack fixed infrastructure and centralized supervision and are often subjected to many random changes in the network topology as nodes are mobile. MANET suffer from security attacks because of its features like open medium, changing its topology dynamically, lack of central monitoring and management, cooperative algorithms and no clear defence mechanism [1]. Hence, security issues are a major concern [2]. MANETs comprises of nodes that communicate through wireless links. Communication is performed by making use of a routing mechanism to route messages from senders to receivers. Here, a routing Protocol such as Ad-hoc On-demand Distance Vector (AODV) Protocol is used to route messages.

B. Security Attacks in MANET

Attacks are violations of rules that were defined on the basis of Security. These attacks could be active attacks or passive. Passive attacks only try to extract

information while Active attacks are used to disrupt the functioning of the network, one of which is the Grayhole Attack. Grayhole attack is a variation of Black-hole attack, where the malicious node is not initially malicious, it turns malicious sometime later.

In this attack, the attacker node drops all data packets but it lets control messages to route through it. Presence of a grayhole attack is studied and the performance of MANET with and without the effect of grayhole is evaluated.

II. PROBLEM STATEMENT

The objective of the work is to compare the performance of AODV routing protocol with and without the grayhole effect for mobile ad-hoc networks based on the performance. Comparison has been made on the basis of properties like Packet Delivery Ratio (PDR), Packet Loss Ratio (PLR), Throughput and End-to-End Delay. The general objectives can be outlined as follows:

1. Study of Mobile Ad-hoc Networks
2. Study of Attack (Grayhole) on MANETs
3. Detailed study of AODV Routing Mechanism
4. Generate a simulation environment that could be used for simulation of MANET using AODV Protocol.
5. Simulate routing mechanism with different scenarios i.e., without and with the grayhole attack in MANET, and
6. Analyze the Performance Metrics and conclude the effect of the grayhole attack to the routing protocol in MANET.

III. ROUTING IN MANET

A. Ad-hoc on-Demand Distance Vector Protocol

The AODV is a Reactive on demand ad-hoc distance vector routing algorithm. AODV is a method of routing messages between mobile nodes. It allows these mobile nodes, to pass messages through their neighbours to nodes with which they cannot directly communicate. AODV does this by discovering the routes along which messages can be passed. AODV makes sure these routes do not contain loops and tries to

Fractional Frequency Reusing for Interference Management in LTE Networks

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Abstract—Long Term Evolution is a promising standard for next-generation cellular system. However, as adjacent cells use the same frequency, interference between adjacent cells may degrade the bit rate at cell edges, preventing sufficient throughput from being obtained. Improvement of cell coverage and network capacity are two major challenges for the evolving 4G cellular wireless communication networks such as LTE-Advanced networks. The downlink performance of cellular networks is known to be strongly limited by inter-cell interference. In order to mitigate this interference, a number of frequency reuse schemes have recently been proposed. This paper discusses a novel fractional frequency reuse (FFR) scheme combined with interference suppression for orthogonal frequency division multiple access (OFDMA) networks, which are currently being considered in LTE-A and WiMAX IEEE 802.16m standardization processes. Simulations are done based on the performance evaluation of SINR with Probability coverage area and Rate threshold with acceptance ratio.

Keywords: *FFR (Fractional Frequency Reuse), OFDMA (Orthogonal Frequency Multiple Access), LTE-A (Long Term Evolution-Advanced).*

I. INTRODUCTION

As an extension of third-generation mobile communication system, the 4th Generation (4G) of wireless mobile systems is characterized by Long Term Evolution (LTE) [1] and WiMAX [2] technologies which is aimed at achieving high spectral efficiency through the use of a one-cell reuse frequency allocation system that allocates the same frequency to adjacent cells, the same in the third generation system. These standards continue to evolve with higher data rates and improved Quality of Service (QoS) even for the cell edge users as the main targets. In order to achieve these, MIMO antenna techniques have been incorporated in these standards. The capacity promised by MIMO systems may not be fully realizable by conventional cellular architectures without additional control of inter-cell interference which limits throughput, in particular for cell-edge users [3].

One of the main objectives of LTE is to achieve high spectral efficiency, meaning the use of the whole of the system's bandwidth in all cells. This approach is called Frequency Reuse 1 and is considered as the simplest frequency reuse scheme: all sub-bands of the available bandwidth are allocated to each cell. In

Frequency Reuse 3, the system bandwidth is divided into 3 equal sub-bands; each one of these is allocated to cells in a manner that no other surrounding cell is using the same sub-band. Full frequency reuse in each cell can exempt the necessity of advance frequency planning among different cells, and the frequency reuse patterns can be dynamically adapted on a frame-by-frame basis in each cell. In this work a sub-case of these approaches is studied and analysed below.

Orthogonal Frequency Division Multiple Access (OFDMA) has become an attractive technology for achieving high data transmission rate in wireless communication systems and it is part of various system standards for mobile communications. This happens because each terminal occupies a subset of subcarriers (called OFDMA traffic channel) and each traffic channel is assigned exclusively to one user at any time. Therefore, OFDMA offers great spectrum efficiency and flexible frequency allocation to users. However, in Long Term Evolution (LTE) networks the system performance is severely hampered by the Inter-Cell Interference (ICI) due to the frequency reuse. For example, the cell edge users will experience high interferences from neighbouring cells. Fractional Frequency Reuse (FFR) is discussed in OFDMA-based networks to overcome the Co-Channel Interference (CCI) problems (where different radio transmitters use the same frequency) and ICI problems [1]. In FFR the cell space is divided into two regions: inner, which is close to the Base Station (BS) and outer, which is situated to the borders of the cell. The whole frequency band is divided into several sub-bands, and each sub-band is assigned either to the inner or the outer region of the cell. As a result of FFR, CCI is eliminated, and ICI is substantially reduced [2]. At the same time the system throughput is enhanced.

Fractional frequency reuse (FFR) is an interference management technique well-suited to OFDMA-based cellular networks wherein the bandwidth of the cells is partitioned into regions with different frequency reuse factors. These standards use Orthogonal Frequency Division Multiple Access (OFDMA) as a combined transmission and multiple access technique in the downlink. With OFDMA, the system bandwidth is split into a number of sub-carriers, each featuring a bandwidth smaller than the systems coherence

Comparative Analysis of Color Image Watermarking using DWT, DWT-SVD and DCT

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Abstract - Rapid development in computer technology makes images, audio, text and video can be more easily reproduced, processed and stored in digital devices. Digital watermarking is a technique which allows an individual to add hidden copyright notices or other verification messages to digital audio, video, or image and documents. In this paper the concept of color image watermarking technique is performed (i.e., both Host Image and Watermark Image are color images), using DWT based algorithm, DWT-SVD based algorithm and DCT based algorithms. The performance metrics Peak Signal-to-Noise Ratio (PSNR) and Normalized Correlation (NC) are analyzed. In addition to the above analysis a robustness check is performed in a watermarked color image with an application of various attacks (Salt- Pepper Noise Attacks, Rotation (Clockwise), Blurring, Image Sharpening and Gaussian Noise) to illustrate the efficiency of the above algorithm.

Keywords - Discrete Wavelet Transform (DWT);, Singular Value Decomposition (SVD); Discrete Cosine Transform (DCT); Mean Square Error (MSE), Peak Signal-to-Noise Ratio (PSNR) and Normalized Correlation (NC).

I. INTRODUCTION

Image processing is one of the forms of signal processing, in which input is an image. Image is considered as a 2-dimensional signal and standard signal processing techniques are applied to it. A digital watermarking is a process of embedding a marker such as audio or image. It is a technique providing copyright information in the images. Watermarks can be used to authenticate the signal which is carrying it or to identify its owners. Embedding is an algorithm in which the watermark is embedded into the host image or the carrier signal. Extraction is an algorithm used to extract the watermark from the host image or the original signal.

Extraction algorithm must be able to extract the signal even if the modifications to the watermarked image is strong, then it is called a robust digital watermarking. In order to check the robustness of the algorithm, various attacks will be performed on it. If the watermark is extracted correctly, even after the attacks on the watermarked image, then the algorithm is called very robust.

Discrete Wavelet Transform (DWT) [1, 2] is obtained by passing the signal through a series of digital filters.

Singular Value Decomposition (SVD) [1, 3] is one of the tools to analyze the matrices. SVD is transformation in which matrices are decomposed into 3 matrices U, D, V. U & V are the orthonormal matrices. D is the diagonal matrix.

Discrete Cosine Transform Separates the image or signal into different frequency bands of energy. Real data and even symmetry data are the one to which DCT is applied.

II. DISCRETE WAVELET TRANSFORM

All most all natural images have smooth variations in color, having fine details being represented as sharp edges, between the smooth variations in the pixel values. The smooth variations in color are low frequency variations and the sharp variations are high frequency variations. The low frequency components (smooth variations) constitute the base of an image, and the high frequency components (the edges which give the detail) show the refine image, it gives a detailed image. So, the smooth variations are of more importance than the details (edges). Separating the smooth variations and details of the image can be done in many ways, one such way is that decomposing of the image using a Discrete Wavelet Transform (DWT) [1, 2].

Comparative Performance Analysis of Change Detection Algorithms in Detection of Damage in Local Area

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Abstract – A quick and efficient detection of change in areas which are affected by natural disasters or human exploitation is required in modern days. In this paper the concept of change detection is used in order to study about the damage caused in the local area of crisis. The analysis includes the implementation of algorithms like Combined Edge Segment Texture Analysis (CEST) and Change Vector Analysis (CVA). Also the comparative performance analysis of change detection algorithms is done and the algorithm which is more effective in detection of damage in local area of interest is determined. In addition to the above analysis accuracy parameters like Mean Square Error (MSE), Peak Signal to Noise Ratio (PSNR) for the image datasets will be determined.

I. INTRODUCTION

The processing of the image using various mathematical operations in order to analyse and to manipulate the existing features of it so as to improve its quality is known as image processing. The input that has to be provided can be a single image or can be multiple images or can even be video etc. The outcome of image processing will be another image or can be characteristics related to it such as intensity variation, histogram equalization, and parameters like MSE, PSNR, variance so on.

Image acquisition is the process of acquiring a digitized version of the image which has an object of interest in it.

The type of image taken belongs to multi-temporal data sets, which means here image of particular object is taken at many different time

instants. These type of data sets are required in the case where there is proper estimation of change with respect to the object is required. If a region is affected by earth quake, then that particular area will be having a lot of damaged and destroyed buildings. If a proper image database of that particular region or building is obtained, then the damage or the change occurred in the buildings can be studied by the use of change detection.

Change detection can be called as a technique which is used in remote sensing [4]. It is used in order to determine the changes caused in a particular damaged object which is under study. This study is done between two or more than two time periods.

II. OVERVIEW OF PROPOSED WORK

In this paper, the comparative performance analysis of change detection algorithms is done in order to detect changes in damaged buildings in the areas which are in crisis. Here algorithms used are Combined Edge Segment Texture (CEST) and Change Vector Analysis (CVA).

The region affected by any natural calamity is selected and its two images relatively taken one before the disaster and other image which is taken after the natural calamity. After selection of suitable database, next step is to analyse the images using different change detection algorithms where in which the comparison of various parameters will be done from which the percentage of change or damage occurred can be indicated.

III. CHANGE DETECTION ALGORITHMS

Speech Enhancement Using Filtering Techniques

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ABSTRACT

Abstract-- The aim of the speech enhancement is to improve the intelligibility and quality of the speech. By recording the speech signal in the noisy environment, clean speech signals are degraded. Speech enhancement reduces the noise without distorting the original (clean) signal. In this concept, Adaptive Wiener filter with Two Step Noise Reduction (TSNR) and Harmonic Regeneration Noise Reduction (HRNR) methods are used to enhance the noisy speech signal. Filter properties are derived in terms of input SNR and output SNR. The performance of this filter is compared by considering the SNR of these methods.

Keywords: Adaptive Wiener Filter, HRNR, Processing speed, SNR, TSNR.

I. INTRODUCTION

Speech is the one of the most important communication source. Speech signals are electrically transmitted through microphone, earphones or head phones. This may yields the background noise and distorted speech signal. If the microphone and the listeners distance is less, then the speech quality will be high and accurate. The noise present in the speech will cause the degradation of intelligibility and quality of the speech. SNR of the distorted speech signal and the nature of the noise are to be considered for the good communication system. In the case of single channel speech enhancement, usually a second channel is not present in the real time applications such as mobile communication and hearing aids. Building of such systems are easy and also less expensive compared to the multiple channel system.

In the subspace approach, speech enhancement is depends on the vector space decomposition, by the noisy speech covariance matrix into a subspace of noise. Database of male speech signal is taken with 8KHz sampling frequency. There are 120 samples in each frame with 50% overlap. 0.6dB improvement was there in terms of segmental SNR [1]. The basic principle is used in subspace algorithm is decomposition of the vector space of noisy speech into speech-plus noise subspace and a noise subspace. Enhancement is performed by removing the noise subspace and estimating the clean speech from the speech-plus-noise subspace. The decomposition of noisy speech is performed by using the Karhunen-Loeve transform (KLT) tracking-based algorithm [2]. This is not fast compare to other algorithms and this is defined for any finite time interval and they need high computational burden. This is the main drawback of this method [2] [3].

In the case of Spectral Subtractive Algorithm, principle lies in assuming additive noise. By subtracting the estimate of noise spectrum from noisy speech spectrum the clean speech signal spectrum can be obtained. This algorithm consists of low complexity and further enhancement is required [4]. The major drawback of this method is characteristic of the residual noise called musical noise [2][4]. Two methods are used for enhancement of single channel, i.e Iterative Wiener Filter (IWF) and Kalman Filter. Speech signal used in this method is "The angry boy answered". Additive white noise is used for Iterative Wiener Filter with 22.050 KHz sampling frequency and 40msec window duration. For Kalman Filter, car interior noise is considered as the

Optimal Filter Design for Speech Signal Enhancement

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Abstract - Speech Enhancement technique is the method, which is used to improve the quality and intelligibility of the speech signal. Noise which is present with clean speech signal is removed by using the speech enhancement techniques. In this project filtering technique is used to enhance the speech signal. So far many algorithms or methods are used to enhance the speech signal. Some methods used for speech enhancement are very complex and their computational demand is high, so, simple filtering techniques are used here to implement this project. In this concept, Adaptive Wiener filter (AWF) with Two Step Noise Reduction (TSNR) and Harmonic Regeneration Noise Reduction (HRNR) methods and Minimum Variance Distortionless Response (MVDR) filters are used to enhance the noisy speech signal. Filter properties are derived in terms of input SNR and output SNR. The performance of this filter is compared by considering the SNR of these methods.

Keywords - Adaptive Wiener Filter (AWF); Harmonic Regeneration Noise Reduction (HRNR); Minimum Variance Distortionless Response (MVDR); Processing speed; SNR; Two Step Noise Reduction (TSNR).

I. INTRODUCTION

Speech Enhancement technique is used to recover the clean speech signal from noisy distorted speech signal. Before using the speech signal to the communication or for any other applications signal should be clear, so speech enhancement process is done for the degraded signals. There are many algorithms or filters used to enhance the speech signal. In general clean speech signal is not available in the environment. It is uncorrelated with noisy speech signal, which is present in the surroundings as the background noise. These background noises will decrease the speech signals intelligibility and quality. This background noise is the main severe problem in the speech processing system. To overcome this problem many algorithms or filtering techniques are used. This procedure is called as Speech Enhancement. By using this methods quality and intelligibility of the speech signal will increase. Then this enhanced speech signal is used in many applications such as mobile communications, recognition systems etc. Adaptive Wiener Filter

(AWF) and Minimum Variance Distortionless Response (MVDR) filters are the one of the filters used in this paper to enhance speech signal. There are two methods used in Adaptive Wiener Filter method, i.e Two Step Noise Reduction (TSNR) method and Harmonic Regeneration Noise Reduction (HRNR) method. It is impossible to remove entire noise signals from the degraded signal. These methods will give the better results with increased quality in speech signal. Signal to Noise Ratio (SNR) is an important parameter considered during enhancement process. SNR level will increase for the enhanced speech signal.

II. DESCRIPTION

A. Methodology

First, noisy speech signal is taken as the input signal. Then this input signal is windowed to make the entire signal into small frames. Then Adaptive filter is applied on each frame of the speech signal.

Adaptive Wiener Filtering with Two Step Noise Reduction (TSNR) and Harmonic Regeneration Noise Reduction (HRNR) methods

This is one of the popular filtering methods which are used in many speech enhancement algorithms. The principle of this filtering method is to obtain the clean speech signal from the corrupted signal. To implement or to design this filter the spectral properties of the clean speech and noise should be known. For speech enhancement this filter uses two methods i.e TSNR and HRNR. The noise reduction process applies spectral gain to short time spectrum value of noisy speech signal. This gain is expressed as function of priori SNR which is estimated using decision- directed approach. TSNR is used to eliminate the drawback of decision directed approach and retains its advantage. The advantage of the decision directed approach is its capability to eliminate musical noise. But in noise

Bus Accident Alert Using Arduino Mega Board

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ABSTRACT

In the highly populated country like India the need of proper bus transportation system is very essential. At the same time, it is also threat to human life because of the occurrence of bus road accidents. It is not possible to avoid it completely but a system can be introduced on a bus to reduce the consequences of road accidents. This paper introduced a paper, in which the GPS technology will spot the accident location and inform the server through GSM. The server will receive the location and immediately sends the information to the nearby hospital for emergency help as ambulance accident location.

Keywords

GPS, GSM, Arduino board, Visual Studio 2010, Microsoft Access.

1. INTRODUCTION

With the glowing population, the need of transportation system becomes essential. With the increased number of transportation systems, the likelihood of accidents becomes further more. It is not always possible to avoid the accidents but the consequences of such road accidents can be reduced. In high-tech Volvo buses some safety facility systems will be available but the normal regular buses in such safety system

This paper aims to introduce a safety facility system that can reduce the consequence of accidents by sending the accident location details to the server through GPS (Global Positioning System). The area pin code of the accident location will be compared with the stored pin code in the server database. Once the pin code matches, the information is passed to the authorized person of that location. And an immediate safety facility will be provided to the victims to rescue them.

In this system, the GPS technology is used to discover the accident location in the form of latitude and longitude coordinates. These coordinates will be sending to server through GSM (Global System and Mobile communication). The information includes location name and area pin codes. In the server all the pin codes covering all area of the particular city will be pre stored. When the server receives the location pin code, it will compare the received pin code with all the pre stored pin code available.

If the received pin code matches with any of the available pre-stored pin code, the information will immediately be sent to the responsible authorized person. In such case, the authorized person will be immediately sending the safety facility to an accident location. If in case the pin code does not matches with the available pre-stored pin codes, one default

pin code will be available on the server and the location details will be passed to that particular authorized person and he/she will send the immediate safety facility.

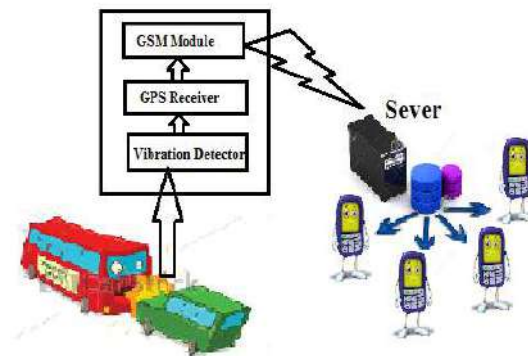


Figure. 1 Overall Diagram of Accident Alert System

2. LITERATURE SURVEY

In all proposed system, only GSM system is used to send the accident location details to the authorized person. The GPS will spot the accident location and microcontroller present in the bus will send this information to an authorized person mobile number through SMS by GSM. In some papers they will use internet as the medium to send the SMS alert, but it will take time to track the location and to provide the help to passenger.

To overcome the new system we introduced a server, which is pre stored with all pin code of different area of that city along the number of authorized person of those respective area will be stored in the database. It will minimize the time to search the accident location.

3. BLOCK DIAGRAM

The whole project will be dividing in to 2 parts.

1. The one unit is installed in bus, which contain Arduino Mega board, Vibration Detector, GPS receiver, GSM module.
2. The other unit is connected to the PC, in which we create the accident alert windows application.

Performance Comparison of IEEE 802.11n HT PHY Using OSTBC with ZF Decoding

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Abstract—Wireless Local Area Networks are very popular among the users today due to the speed on offer, available security mechanisms and the mobility it provides. IEEE 802.11 set of standards for WLAN have undergone multiple revisions to support higher data rates and different operational frequency bands. IEEE802.11n High Throughput Physical layer device (HT-PHY) is an Orthogonal Frequency Division Multiplexing (OFDM) based Multiple-Input Multiple-Output (MIMO) PHY capable of supporting four spatial streams and data rates up to 600 Mb/s. Space-Time Block Coding (STBC) is a MIMO transmission strategy that exploits transmit diversity and provides high reliability. The design aspects of an HT-PHY with dual spatial streams operating at 20 MHz bandwidth supporting the modulation schemes of BPSK, QPSK and 16-QAM on a Field Programmable Gate array (FPGA) are discussed. Implementation of orthogonal space-time block codes (OSTBCs) for this two transmitter–two receiver system under Additive White Gaussian Noise (AWGN) channel and flat fading channel is performed. Alamouti code is employed for the STBC. Decoding is done using the Zero Forcing (ZF) algorithm.

Keywords: Alamouti Code, FPGA, HT-PHY, MIMO, OFDM, Rayleigh Flat Fading, STBC, Verilog, Xilinx, ZFD

I. INTRODUCTION

The IEEE802.11n HT-PHY is an OFDM based PHY designed to operate in 2.4 GHz and 5 GHz frequency bands. The subcarrier modulation schemes used are Binary Phase Shift Keying (BPSK), Quadrature-PSK (QPSK), 16-Quadrature Amplitude Modulation (16-QAM) and 64-QAM. The HT-PHY employs spatial diversity using multiple antennas to support data rates of up to 600 Mb/s. It supports up to 4×4 MIMO channel, in which each path from one transmit antenna to one receive antenna can be viewed as one signaling path. Space time coding combines *all* the copies of the received signal in an optimal way to extract as much information from each of them as possible.

The paper is organized as follows. Section II of the paper deals with the HT-PHY Design. Section III of the paper deals with the STBC that provides full rate diversity, the Alamouti code. Section IV deals with the system model used in the simulation.

This is followed by the results and analysis in section V. Finally section VI provides the conclusion.

II. HT-PHY DESIGN

A. System Specifications

The Specifications chosen for the design are listed below:

- 2X2 MIMO with support for 52 sub-carriers.
- 20 MHz Operating Bandwidth
- BCC with rate $\frac{1}{2}$ and $\frac{3}{4}$ as the FEC code
- Equal Modulation with BPSK, QPSK and 16-QAM as the modulation technique.

B. Block Diagram

The block diagram of the HT-PHY is in Fig. 1.

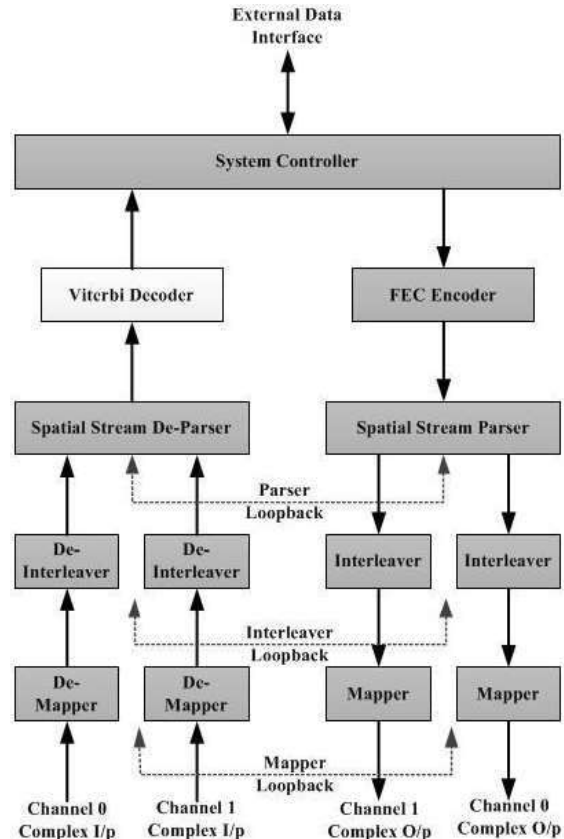


Fig. 1: 802.11n HT PHY Design Block Diagram

Design of folded architecture for One Dimensional DWT using Verilog

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Abstract - The goal of image compression is to reduce the file size while keeping the image quality high. Digital image can be transformed using discrete wavelet transform (DWT). The lifting based DWT have lower computational complexity and reduced memory requirement. The lifting scheme is being increasingly used for image coding and makes use of parallel and pipeline technique. The lifting architecture makes use of multiplier and adder. A large number of adder designs are available based on the constraint of speed and power consumption. Ling adders have less delay when compared to carry look ahead (CLA) adder. Shift and add multiplier optimizes the multiplication and also reduces the complexity in hardware resources. This paper proposes a pipelined one dimensional DWT with lifting coefficients represented in quantized format 2:14.

Keywords - Discrete wavelet transforms (DWT; lifting based DWT; parallel; pipeline; lifting scheme.

I. INTRODUCTION

The compression techniques are used to efficiently utilize the memory .The DWT is being increasingly used for image compression. The one dimensional discrete wavelet has been applied in many image coding techniques. Wavelets are nothing but mathematical functions that splits the data into different frequency components, and then study each frequency component with a resolution matched to its scale. The advantage of using wavelet helps in splitting the signals into different sub bands and provides both frequency and time localization. Because of its excellent locality in time-frequency domain, wavelet transform is prominent and largely used for signal analysis, compressing. DWT can be realized by two different methods: 1) convolution based 2) lifting based [3]. Convolution based Filter bank implementation of DWT contains two FIR

filters. It has been traditionally implemented by convolution or the finite impulse response (FIR) filter bank structures. Such implementations require both large number of arithmetic computations and storage, which are not desirable for either high speed or low power image/video processing applications. The advantage of lifting based architecture over the convolution is that it has reduced computational complexity and requires less memory [4]. This is very attractive for real time application. The architecture used for implementing lifting scheme suffered from critical path latency and had complex control procedure. In order to solve the problem the efficient folded architecture (EFA) for lifting scheme was proposed. The efficient folded architecture was the improvement done to lifting scheme. Here the intermediate data that is used to compute the output data are circulated on different path. Thus intermediate data can be processed in parallel by employing parallel and pipe lining technique. With this operation the convolution lifting based DWT is developed into parallel one. The resulting architecture will have short critical path latency. Moreover the architecture has repeatability. Based on this EFA is derived by employing the fold technique. Making use of EFA reduces the hardware resource along with that it reduces critical path latency and also number of registers used.

II. LIFTING SCHEME

DWT can be efficiently designed with lifting scheme. The lifting scheme has been developed as a flexible tool suitable for constructing second generation wavelet. The lifting scheme consists of 3steps mainly split, predict and update. fig1 shows the block diagram of lifting based DWT [5].

Design of Laminated Turbo Encoder using Verilog

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Abstract - Transmission of data over a wireless channel might cause the corruption of data because of noise and interference present in the channel. Thus channel coding is used. In this, the data is transmitted along with the redundant bits. This will allow the decoder to detect and correct the errors without the need for retransmitting the data.

Until the invention of turbo codes, none of the practical codes were able to operate close to the Shannon limit. Turbo codes enabled data transmission at rates close to the Shannon limit. Turbo codes are generated by terminated convolutional encoders. But to exploit full system memory, unterminated structure is desired. But for such structure, iterative decoding algorithm cannot be easily adapted. Thus laminated turbo Code (LTC) was introduced as an alternate for turbo codes.

LTC uses block-convolution structure and enables to use block-oriented iterative decoding method enabling the use of Bahl-Cocke-Jelinek-Raviv (BCJR) algorithm. The performance of the LTC is increased by using inter-block memory. This paper presents the design of laminated turbo encoder (LTE). The rate $\frac{1}{2}$ convolutional encoder is used and the overall rate of $\frac{3}{4}$ is obtained by suitably puncturing the output of the encoder. LTC is designed using verilog-HDL and is synthesized for Virtex4 FPGA. The design is verified using a MATLAB code. The delay and throughput are calculated.

Keywords - Convolutional codes; interleaver; puncturing; FPGA.

I. INTRODUCTION

Wireless communication was invented over hundred years ago, starting around 1897 with the invention of wireless telegraphy by Marconi. The first generation (1G) was completely analog in nature and provided voice transmission with the frequencies around 900 MHz and had a data rate of 9.6 Kbps. It used analog modulation. The primary disadvantage of analog transmission is its poor noise immunity and low data rates. The

next generation of communication systems introduced in the early 1990s used digital technology for transmission. Digital techniques offer many advantages over analog techniques and greatly improve the performance of the communication systems. Sequence of bits is used to represent the information in digital communication system. The processing is done in digital domain. Before transmitting over the channel, the binary data is modulated on an analog waveform [1]. When transmitting the data over a wireless channel, it might be corrupted by the noise and interference present in the channel. At the receiver side, the received signal will be demodulated and will be converted back to binary bits. But due to the noise and interference induced by the channel, the received signal may not be same as the signal that is transmitted. Thus, before transmitting the information over a noisy environment, it should be protected. Also, wireless devices have the limitation of the battery life. Hence, the transmitted power should be as low as possible. But as the transmitted power is lowered, the system will be more susceptible to noise and interference. This will increase the bit error rate (BER). But, the digital data transmission aim to provide low bit error rate. Thus, in order to increase the noise immunity and lower the transmission power of the communication systems, channel coding is used [2].

The idea of channel Coding is to transmit data plus redundant data so as to allow the receiver to recover from errors all by itself with no sender retransmission required. Hence the channel coding scheme will protect the signal from interference and noise and helps to reduce the BER and improves the reliability of transmission. The channel encoder transforms the information sequence into a discrete encoded sequence called the code word. Due to the addition of redundant bits, the data rate will decrease. Thus to increase the BER by using channel coding, the price paid is bandwidth expansion or reduction in the data rate [3].

Raspberry Pi Based VOIP GSM Gateway System and Its Performance Analysis

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Abstract -- The IVR (Interactive Voice Response) is a technology that allows a computer to interact with humans through the use of voice. Use of this technology allows us to divert a call from outside organization to the different sections of internal organization, which is made by the receptionist in the organization. The IVR can be designed with the effective combination of Hardware and software. This embedded system has to be affordable for the less section organization also. Due to the advancement in semiconductor industry ARM processors price are low, hence there are lower end motherboards with ARM as core CPU is available in the Market. This gives changes to rapidly implement the task. To take advantage of the Hardware there is a need for a robust operating system. Linux is one of the operating system which supports for many hardware. One of the low end boards is Raspberry Pi, which has an ARM 11 with 512 MB of RAM. Raspbian wheeze is default Operating System, which is derived from the Debian Linux OS. The Asterisk server application will enable the Raspberry Pi to act as IVR server. Asterisk server is Open source software. In this project the performance parameters of Raspberry Pi are analyzed. SiPp() load test is done for the Asterisk server to check the simultaneous calls.

Keywords - Asterisk server; Pycall; Raspberry Pi; SiPp; VOIP.

I. INTRODUCTION

The Evolution of Mobile phone helps people to do many tasks in a device easily along with the phone call. With the advent of wireless technology every mobile device can access Internet at High speed. This technology slowly merges the voice call along with the Internet. This kind of technology allowed the user to make a call using Internet Protocol (IP) given a new dimension for voice based calls. The quality of the call has improved when compared with the older technology. Like 2G.

In order to merge voice with the Internet, there is protocol named VoIP (Voice over Internet Protocol) or IP (Internet Protocol) telephony.

VOIP is defined as transmitting voice signal using the Internet Protocol over the public internet or a private data network. VoIP converts voice signal from the telephone into a digital signal that travels over the internet. VoIP is also the foundation for more advanced services like IM, video call or video conferencing etc.

Today VoIP technology is one of the most popular services provided over the internet. This technology is not only being implemented by the big companies, but also it is being used in small businesses [3]. Indeed, this VoIP or IP telephony can now be installed in low end processors due to the low cost of accessing the technology

The Raspberry Pi is the one of the low end, tiny and very cheap computing platform that is being used to deploy the VoIP server [4]. Technically, there are two versions of raspberry pi, Model A and Model B. Model A and Model B has memory size of 256 and 512 in terms of MB's respectively. Because of the larger memory size Model B version of raspberry pi is being used in many of raspberry pi related projects. This device uses the Raspbian Wheezy operating system; hence many open source software can be easily compiled to run network services, like IP telephony. Its small size reduces energy consumption, which reduces overall cost of raspberry pi based solutions.

II. LITERATURE SURVEY

The author SheethalJalendry [1] discusses about the architecture, codecs and protocols of the VoIP. According to the author VoIP consists of end user equipment's, network components, server and gateway. The author gives a brief introduction about VoIP technology and how the

Exemplar Based Image Inpainting Using Gradient Based Method

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Abstract—A new algorithm is proposed for removing large objects from digital images. The challenge is to fill in the hole that is left behind in a visually plausible way. This has been addressed by two classes of algorithms: (i) “inpainting algorithms” for filling in small image gaps, and (ii) “super resolution” techniques” for creating one enhanced resolution image. This paper presents a novel and efficient algorithm that combines the advantages of these two approaches. We first note that exemplar-based texture synthesis contains the essential process required to replicate both texture and structure; the success of structure propagation, however, is highly dependent on the order in which the filling proceeds. We propose a best-first algorithm in which the confidence in the synthesized pixel values is propagated in a manner similar to the propagation of information in inpainting.

Keywords: *Exemplar-based Inpainting Framework, Non Parametric Patch Sampling*

I. INTRODUCTION

Inpainting is the process of reconstructing lost or deteriorated parts of images or videos. Image inpainting consists in recovering the missing or corrupted parts of an image so that the reconstructed image looks natural. Image inpainting refers to methods which consist of filling-in missing regions (holes) in an image.

The first category concerns diffusion-based approaches which propagate linear structures or level lines (so-called isophotes) via diffusion based on partial differential equations[1], [2] and variational methods [3]. The diffusion based methods tend to introduce some blur when the hole to be filled in is large. The second family of approaches concerns exemplar-based methods which sample and copy best matching texture patches from the known image neighbourhood [4]. These methods have been inspired from texture synthesis techniques [8] and are known to work well in cases of regular or repeatable textures. The first attempt to use exemplar-based techniques for object removal has been reported in [6]. The two types of methods (diffusion-and exemplar based) can be efficiently combined, e.g. by using structure gradient to compute the priority of the patches to be filled. A recent approach [10] combines an exemplar based approach with super-resolution. It is a two-steps algorithm. First a coarse version of the input picture is inpainted. The second step consists in creating an enhanced resolution

picture from the coarse inpainted image. Although tremendous progress has been made in the past years on exemplar-based inpainting, there still exists a number of problems. We believe that the most important one is related to the parameter settings such as the filling order and the patch size. This problem is here addressed by considering multiple inpainted versions of the input image. To generate this set of inpainted pictures, different settings are used. The inpainted pictures are then combined yielding the final inpainted result. Notice that the inpainting algorithm is preferably applied on a coarse version of the input image; this is particularly interesting when the hole to be filled in is large. This provides the advantage to be less demanding in terms of computational resources and less sensitive to noise and local singularities. In this case the final full resolution inpainted image is recovered by using a super resolution(SR) method.

First method is the inpainting algorithm. Consider a region in the image to be inpainted. Algorithm starts from the boundary of this region and goes inside the region gradually filling everything in the boundary first. It takes a small neighbourhood around the pixel on the neighbourhood to be inpainted. This pixel is replaced by normalized weighted sum of all the known pixels in the neighbourhood. Selection of the weights is an important matter. More weight age is given to those pixels lying near to the point, near to the normal of the boundary and those lying on the boundary contours. Once a pixel is inpainted, it moves to next nearest pixel using weighted Battacharya Method. This ensures those pixels near the known pixels are inpainted first.

Super-Resolution (SR) is a class of techniques which refers to the process of creating one enhanced resolution image from one or multiple input low resolution images in an imaging system. The two corresponding problems are then referred to as single or multiple images SR, respectively. In both cases, the problem is of estimating high frequency details which are missing in the input image(s).

The proposed SR-aided inpainting method falls within the context of single-image SR. The SR problem is ill-posed since multiple high resolution images can produce the same low-resolution image. Solving the problem hence requires introducing some prior



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This is to certify that Mr./Ms./ Pavithra S.G from Department of E & C Engineering, St Joseph Engineering College, Mangalore, has Presented the Research paper titled DDCT-PCA BASED IMAGE FUSION TECHNIQUE and authored by Pavithra S.G, Ms Preetha D'Souza in the International Conference ICIRS 2015 at Bengaluru.

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DDCT-PCA based Image Fusion Technique

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Abstract –In this paper we study about Directional Discrete Cosine Transform (DDCT) and Principal Component Analysis (PCA) based multi focus image fusion. It is one of the hybrid techniques, where both transform and spatial domain methods are used. In this algorithm, DDCT is performed on images to be fused, which consists of 8 modes. Coefficients obtained from each mode of an image are fused using the fusion process and the same procedure is repeated for other modes of DDCT. Eight fused images are obtained at the end of first stage. These eight fused images are combined using PCA in the second stage. Performance of this fusion rules are compared by using reference based fusion quality evaluation metrics such as Root Mean Square Error (RMSE), Peak Signal to Noise Ratio (PSNR), Correlation Coefficient (CORR) and non-reference based fusion quality evaluation metrics such as Spatial Frequency (SF), Standard Deviation (SD) and Average Pixel Intensity (API).

Keywords - *Multi focus image fusion, Directional Discrete Cosine Transforms (DDCT), Principal Component Analysis (PCA) and Fusion quality evaluation metrics*

I. INTRODUCTION

Image Fusion is defined as the task or technique of combining two or more images into a single image. The new single image retains important information from each input or source images. Image fusion is a powerful tool used to increase the quality of image. Image fusion increases reliability, decreases uncertainty and storage cost by a single informative image than storing multiple images [10].

Image transform is basically a representation of an image. One of the most powerful transform with sinusoidal basis function is the Discrete Cosine

Transform (DCT) [6]. DCT is an important transform extensively used in digital image processing. Large DCT coefficients are concentrated in the low frequency region and hence it is known to have excellent energy compactness properties.

Generally, two dimensional (2D) Discrete Cosine Transform (DCT) is applied on the image blocks of square size ($N \times N$). This conventional DCT is implemented separately through two 1D (one dimensional) transforms, one along the vertical and another along the horizontal direction [1]. The 2D DCT gives best results for image blocks in which horizontal and vertical edges are dominating. Edges other than dominating directions are also important and these edge orientations will vary from one image block to another. In this situation, Directional Discrete Cosine Transform (DDCT) is the better than the 2D DCT. In DDCT [7], first 1D DCT is applied along the vertical or horizontal directions within the image block, while the second 1D DCT can be applied according to the arrangement of the coefficients after first 1D DCT.

PCA is a standard tool in modern data analysis. The goal of PCA is to identify the most meaningful basis to re-express a data set. Principal Component Analysis (PCA) is a technique which transforms a correlated variable into an uncorrelated variable called principal component. PCA generates a set of orthogonal axes of projections known as principal components or the Eigen vectors, of the input data distribution in the order of decreasing variance. The first principal component accounts for more variance in data, whereas succeeding components accounts for remaining variance in data as possible. The number of principal components is less than or equal to the number of original variables.

An Efficient Image fusion algorithm based on Directional Discrete Cosine Transform and Principal Component Analysis

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Abstract - Multi focus image fusion algorithm based on Directional Discrete Cosine Transform (DDCT) and Principal Component Analysis (PCA) is presented. It is one of the hybrid technique, where both transform and spatial domain methods are used. In this algorithm the two input images are divided into non-overlapping square blocks and the fusion process is carried out on the corresponding blocks. This algorithm consists of two stages. In the first stage, modes 0 to 8 operations are performed on the images to be fused. The coefficients which are obtained from each mode of the two input images are combined or fused using three different fusion rules and they are averaging the corresponding coefficients (DDCTav), choosing the corresponding coefficient with maximum absolute value (DDCTmx) and choosing the corresponding frequency band with maximum energy (DDCTek). The same procedure is repeated for other modes and eight fused images are obtained from each mode. In the second stage, these eight fused images are combined using PCA. The Performance of the algorithm is analyzed quantitatively and evaluated by using fusion quality evaluation metrics such as Root Mean Square Error (RMSE), Peak Signal to Noise Ratio (PSNR), Correlation coefficient (CORR), Spatial Frequency (SF) and Standard Deviation (SD), where the experimental results and analysis show that DDCTek fusion rule provides better results compared to other two fusion rules.

Keywords - Multi focus image fusion; Directional discrete cosine transforms (DDCT); Principal Component Analysis (PCA).

I. INTRODUCTION

Multi focus image fusion plays an important role in daily life applications such as

remote sensing and medical image processing. The goal of image fusion is to combine two or more source images into one single image such that the single image contains most of the information from all the source images. In digital camera applications, optical lenses suffer from a limited depth of focus [2]. Because of this limitation, it is not possible to get an image that contains all relevant objects in focus. One of the possible solutions is to take several pictures with different focus lengths and combine them together into a single frame to get all the information from the less focus area using image fusion method. The aim is to enhance the quality of an image, so that it provides more detail information than the source images [1].

II. BACKGROUND STUDY

Image fusion is a process of combining two or more images into a single fused image where the fused image contains all the useful information than any of the input images and this fused image is more suitable for human visual perception [1, 2]. Image fusion process takes place at three levels and they are pixel, feature and decision level [3, 4]. Pixel level is a low level of fusion, where data is analysed and combined from different sources before original information is estimated and recognized [4, 5]. Feature level is a middle level of fusion, where important features are extracted from images like length, shape, edges, direction and segments [4, 5]. Decision level fusion is a high level of fusion, where actual target is pointed. These three methods can be broadly divided into two types and they are spatial domain and transform domain methods [5, 6].

Spatial domain fusion methods, directly deals with the pixels of an image and pixel values are manipulated to achieve desired result. Averaging, Brovary Transform, Select Minimum or maximum and Principal Component Analysis (PCA) [7] based methods

Diagnosis of Coronary Artery Disease by Acoustic Feature Identification Method

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Abstract - When the significant blood vessels which provide the heart with oxygen, blood and important nutrients for the nourishment of heart become diseased it will result in Coronary Artery Disease (CAD). As the presently available techniques for the detection of CAD are unable to detect the disease at the early stage there is a need for the method which could give the information about the same as to prevent the death rate. The objective of the current study is to develop a low cost, easily available method for the noninvasive diagnosis of CAD depending on the acoustic sounds collected from the heart using a stethoscope.

Keywords - Auto Regressive; Coronary Artery Disease; Heart Sound recordings; Multiple Signal Classification; Noninvasive.

I. INTRODUCTION

CAD (Coronary Artery Disease) is most common reason for the cause of death in the western world due to the extensive accumulation of fatty contains in the arteries. The shrink and thick arteries thus limit blood supply to it. As a result, heart muscles are supplied with the limited oxygen resulting in chest pain called angina, shortness of breath etc and even the complete blockage may result in heart attack. The cardiac cycle consists of two periods, systole and diastole. Sound components may be audible on heart auscultation are classified into two classes: first class which include the basic elements sound 1, sound 2, sound 3, sound 4 which are of less duration and second class includes murmurs which are of large period. The murmurs are present along with basic elements of heart sound signals in abnormal case. Generally S3 sound occurs below 0.5sec after S2 and S4 present below 0.1sec before S1, which are audible along with sound S1 and S2. S1 has the frequency less than S2 but the period of S1 is greater than S2 in general case, but both of them are low pitched. S4

is the indication of abnormality where S3 is normally present in young. The abnormal heart sounds, murmurs are the sounds of interest during the body checkup which gives the indication of abnormality. Heart sounds are of relatively low intensity and are band limited to about 10–1000 Hz. The respiratory sounds, environmental disturbances, measuring equipment noises are less than the frequency of 50Hz where as primary heart sound components are present in the frequency range of 50 Hz to 600 Hz and murmurs are said to be present beyond 600 Hz. Wide band components and resonance related components can be estimated to give the better information of energy associated with the signal. Parametric models are studied by AR and MUSIC methods. The currently available methods for the detection of CAD include ECG test, Coronary angiography, Computed Tomography etc, are little expensive and require highly skilled technicians to operate the instruments. So the present study focuses on extracting number of features which are present in several frequency bands in the heart sound recordings for the diagnosis of CAD.

II. OVERVIEW OF PROPOSED WORK

In this paper, the acoustic signal identification method is used for the detection of Coronary Artery Disease. Automatic interpretation of heart sounds using structural algorithms includes three important actions: heart sound signals are portioned into periods like diastole and systole, important features extraction which give descriptive analysis and categorizing the analysis into abnormal or normal state. In CAD detection algorithms, the periods having high energy associated with CAD murmurs are identified. Thus features gathered using the method is

A COMPARATIVE STUDY ON SPEECH PROCESSING BASED ON SPOKEN DATA INVOICE CHARACTERIZATION

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Abstract—This paper discusses speech coding system based upon transform coding (TC). It shows that the cosine transform leads to a nearly optimum performance for almost all speech signals. The accuracy and execution speed of the speech signals is critical if large amounts of data are to be processed, particularly in real-time.

The speech signal is compressed using discrete cosine transform (DCT) for various input signals and decompressed using Inverse Discrete Cosine Transform (IDCT). The Mean Square Error (MSE), Peak Signal to Noise Ratio (PSNR) and compression ratio is calculated for every signal.

Index Terms—Compression, Discrete Cosine Transform (DCT), Inverse Discrete Cosine Transform (IDCT).

I. INTRODUCTION

Speech is the vocalized form of human communication and it contains redundant information. Speech often requires a large amount of storage. Speech processing is the application of digital signal processing to the processing or analysis of speech signals. The purpose of speech compression is to reduce the number of bits required to represent speech signals by reducing redundancy in order to minimize the requirement for transmission bandwidth or to reduce the storage cost.

Speech signal processing is the intentional alteration of auditory signals. There are two types of

processors: analog and digital processors. Analog processors operate on electrical signal, while digital processors operate on the digital representation of that signal. Analog signal is a Mathematical representation of a signal by a set of continuously changing values. Digital representation of a signal is usually in binary form.

II. PROCEDURE

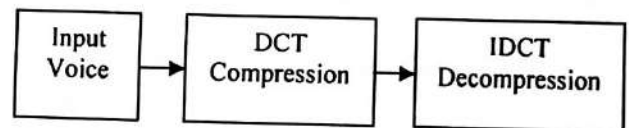


Figure 1: Proposed System

The block diagram of the proposed system is as shown in Figure 1. The entire system is divided into two phases and is executed using MATLAB software. The first stage is the training phase. In the first stage i.e., the training phase the samples of different speakers are collected using the Voice box tool in MATLAB. The second stage is the testing phase where a voice is given as input, this voice is compressed using Discrete Cosine Transform (DCT) compression technique, transmitted and at the receiving end it is decompressed using Inverse Discrete Cosine Transform (IDCT).

The Mean Square Error (MSE), Peak Signal to Noise Ratio (PSNR) and compression ratio of each signal is calculated.



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This is to certify that Mr./Ms./ Flavita Janice Pinto from Department of E & C Engineering, St Joseph Engineering College, Mangalore has Presented the Research paper titled A COMPARATIVE STUDY ON SPEECH PROCESSING BASED ON SPOKEN DATA IN VOICE CHARACTERIZATION and authored by Flavita Janice Pinto, Rashmi H in the International Conference ICIRS 2015 at Bengaluru.

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Circuit protection against arcing by intelligent spectral analysis

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Abstract—With the advent of advances in electronics, demand from customer for more functionality of circuits, system designers are using advanced packaging technique. For consumer application, this is working well. However when it comes to mission critical system such as missiles, torpedoes, submarine and aerospace product, circuit failure in any form results in failure in strategy planned. This paper brings out technical method which can detect electrical arcing taking place in circuits; thereby necessary corrective measure can be initiated to stop catastrophic damage. Experiments have been carried out to identify spectral characteristics of electrical arcing and this data can be used for automated intelligent detection technique. An arc generation and characterizing facility has been designed and used. From the experiment carried out, it is seen the spectrum is a strong characteristics of unintentional arcing which cannot be detected. Even a small amount of arcing which takes place in the beginning of the process can be detected by observing the spectrum. From the results brought out in the paper, it is a powerful technique which when integrated with system development can give solution to major problem encountered due to arcing.

Keywords—*Electric arc, Intelligent spectral solution, Innovative electrical and electronics circuit protection, Electric arc protection for defence product.*

I. INTRODUCTION

With so many protective devices like circuit breakers, fuses in corporate in all electrical wiring; following NFPA 70E standards, electric arc plays a major role in electric disasters causing fire which can be catastrophic. This is applicable both in building wiring as well as in equipment and aerospace and defence related product and this is a hot research topic [1]. Arc damage model tools have been developed for assessing failure and severity assessment and are getting evolved to address various issues [2]. Signal processing techniques are also being continuously adopted to find the solution [3]. However an efficient and reliable system which gives solution against this issue of arcing is yet to reach an acceptable level for strategic circuits. This has resulted in exploring various other research areas which are likely to give a solution. Globally it has been observed that the main reason for fire in the buildings is due to electric arc in the cables. Statistics show that among fire accidents approximately 35 percent of them are due to electrical faults out of which approximately 90 percent are due to electrical arc [4]. Though these figures are not that alarming when it comes to professional facilities; the impact of failure is equally significant and has non-repairable damage.

The arcing takes place in time domain which can also be analyzed in its corresponding frequency domain. The information and signature of arcing gets translated in to the frequency domain which has valuable insight in to the arcing. By having continuous monitor and deriving intelligent information it is possible to predict likely occurrence of catastrophic events there by protecting and saving huge assets. This paper address this issue by developing unique controlled arc generation in special designed set up so that the spectrum generated during arcing can be evaluated and analysis can be carried out. With the advancement of technology one wonders why we do not have a mechanism to keep a check on this 'evil'. Technology of protective switch gear based on current and voltage have advanced to a level where they are dependable and have become an integral part of the grid and cable network [5]. These control circuits are generally not able to protect when there is arcing in the cable. It is said that arcing is a 'silent killer' of cables and a single major cause of fire as per the statistics. One of the main reasons why a protective mechanism does not respond to an electric arc is that the arc behaves like a normal load drawing the current and hence deceiving the safety protective mechanism.

Electrical cable has become a weak link in the power distribution system as they are subjected to harsh environment and, they are mostly concealed and laid underground [6]. Electrical cable can be considered as a complex subsystem with large varieties of conducting and insulating materials and with varied manufacturing process which are dependent on large number of parameters.

II. MECHANISM OF ELECTRIC ARC

Electric arcing is a complex phenomenon and encompasses different specialization such as plasma engineering, material science, high voltage engineering. The arcing process starts with the change in electrical property of a material across which a voltage is appearing. This gives rise to change in atomic structure of the material which encounters the electric field and the voltage [7]. The change in material property depends on the electric field intensity and its inherent property. Initially the material gets heated up which in turn initiates the process of changing the property of the material which triggers the chain reaction, accelerating over a period of time. Due to this action electrical breakdown of small quantity of material takes place, resulting in increased flow of current in the path through which earlier there was no flow of current.



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Compressed Sensing for Secured Data Transmissions

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Abstract—It is very important to secure digital multimedia like audio, image etc. while transmitting through an insecure channel. Many cryptographic and steganographic approaches are used to ensure data security. Also the channel is bandwidth constrained, hence the data needs to be compressed. Compressed Sensing (CS) is a recently emerged technique which enables signals to be reconstructed even if it is sampled at a rate less than the Nyquist rate. It is an efficient signal acquisition technique which collects only a few measurements from the signal of interest and later uses optimization techniques for reconstructing the original signal from an incomplete set of measurements. CS also ensures security to the compressed signals i.e., CS can be seen as a technique for sensing compressing and encrypting the data simultaneously. This paper compares Orthogonal Matching Pursuit (OMP) and Iterative Hard Thresholding (IHT) algorithms for CS reconstruction. To ensure additional security SVD based steganography scheme is used.

I. INTRODUCTION

Security is an important issue these days for data and multimedia communications. Several techniques are at present available to secure information from unauthorised access. Cryptography is the technique of encrypting the data. Many public key and private key encryption techniques are used to make the data to be transferred, in an unintelligible form so that only the authorised person can decrypt the information with the valid key. As long as the key is kept a secret between the sender and the receiver the message will be secured.

In the conventional encryption technique, first the image to be encrypted will be sampled, compressed and then encrypted using a suitable key and then transmitted through the channel. Compressed Sensing (CS) is a newly emerged technique which is used to reconstruct an image from far few measurements than specified by the Nyquist rate [1]. CS can be viewed as a single block which combines compression and encryption. CS is applicable only for sparse signals [2] and can be successfully implemented for images which contains highly redundant information. Since its introduction 10 years ago many algorithms have been developed to reconstruct the signals from the incomplete dictionary of elements. The measurement matrix used in CS acts as the key to encrypt the image. To ensure proper encryption, the measurement matrix should satisfy

Restricted Isometry Property (RIP) and $M > K/2$ where M is the number of samples to be considered out of the entire N samples of the signal and K is the sparsity of the image.

To ensure additional security to the encrypted image Singular Value Decomposition (SVD) based steganographic approach is incorporated [3]. Steganography is a technique in which the secret data to be transferred is hidden in another medium (text, audio or video) such that the existence of secret image is unknown to the third party.

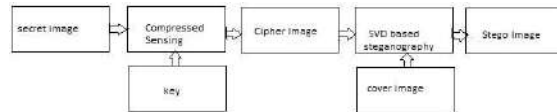


Fig. 1: Combined Encryption and Embedding Stage for Images

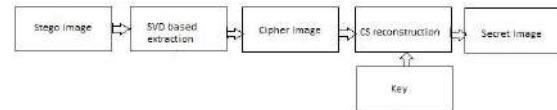


Fig. 2: Combined Decryption and Extracting Stage for Cipher Images

Here, cryptography and steganography techniques are combined to ensure complete security of the secret image. Encryption is achieved along with compressive sensing and the cipher image is embedded in the cover image using steganography based on SVD. The resultant stego image is transferred along the channel. The hidden image is extracted from the stego image and decrypted using CS reconstruction techniques. In this paper two reconstruction techniques namely Orthogonal Matching Pursuit (OMP) and Iterative Hard Thresholding (IHT) has been used and their performance is being compared.

Rest of the paper is organised as follows. Section II gives a brief overview of compressed sensing and explains OMP and IHT reconstruction algorithms. Section III discusses SVD based image steganography. Result analyses is made in section IV and conclusions in V.

II. COMPRESSED SENSING

In CS, compression and sampling is achieved in a single step. If N is the length of the signal X , the claim of compressive sensing is that from $M = cK \log_{10} N$

A COMPARATIVE STUDY ON COMPRESSION AND COMPRESSED SENSING BASED ON SPOKEN DATA IN VOICE CHARACTERISATION

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Abstract - Speech processing is the fastest growing technology due to its application in various fields of science. This project aims at minimizing bandwidth required for transmission, reduce the compression rate, improve the efficiency of compression, reduce the storage and transmission costs, accelerate computation time and improve the signal with minimal noise, while maintaining the quality of the speech at the receiver end. The first stage is the training phase which involves creation of a dataset where speech signal of various speakers are stored and Mel Frequency Cepstral Coefficients (MFCC) obtained of each input signal is calculated. In the second stage compression or compressed sensing of the signal using Discrete Cosine Transform (DCT) technique is performed to decrease the amount of bits for broadcast. Inverse Discrete Cosine Transform (IDCT) is done in order to recover the signal at the receiver. Third stage is the speaker recognition stage, which involves Mel frequency cepstral coefficients and vector quantization technique. Finally a comparative study between compressed sensing and compression of speech signals based normalized root mean square error; peak signal to noise ratio and compression ratio is performed using MATLAB.

Testing is done for 'n' number of speakers and results show efficient speech recognition. A comparative study on compression and compressed sensing is performed based on different parameters.

Keywords - compressed sensing; Discrete Cosine Transform (DCT); Inverse Discrete Cosine Transform (IDCT); Compression.

I. INTRODUCTION

Speech is a form of communication which involves lot of redundancy. Speech requires a lot of storage space as well as large number of bits

for transmission. Speech processing is the application of digital signal processing to the processing or analysis of speech signals. The purpose of speech compression is to reduce the number of bits required to represent speech signals without affecting the quality of speech at the receiver end.

Speech signals can be either digital or analog. Digital processing is performed mathematically on digital representation of signal and analog processors on electrical signal. Speech coding is the area related to compression and decompression of speech signals. Speech verification is used in biomedical processing of signals where it is required to authenticate a speaker or identify the speaker. Speech enhancement is done to improve the lucidity in the quality of tainted verbal communication. Speech synthesis is reproduction of verbal communication. One of the goals of this project is to find which of the two techniques i.e., Compression or Compressed Sensing, is an effective method for compression of speech signals. It aims at squat bit rate communication, whilst incurring a negligible deprivation of involuntary speech recognition exactness. It also aims at minimal distortion of the signal during transmission to successfully recover the signal at the receiver end.

The existing speech recognition techniques are noise sensitive [1]. Speech processing is an important aspect in forensic science [2], education, research and an aid for the blind. This project aims to maintain the quality of speech during transmission. It also aims to reduce the bits required for transmission. Reduction in the number of bits transmitted reduces the bandwidth required for transmission as well as decreases the storage costs.

In paper [4] the singers' accent individuality is collected beforehand. Rather than comparing the features from the spoken

Smart Water Distribution System

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Abstract - Water leakage in water distribution system is a major issue. The leak in pipes could be due to various reasons like poorly constructed pipelines, inadequate corrosion protection etc. The paper consists of a model that's been designed to detect and respond to the water leak at the earliest. During water leakage, real time transmission of information at dynamically changing environment should be achieved. This can be done using Wireless Sensor Network (WSN) technology. Here water flow sensors are used to detect water leak in distribution system by observing change in flow rate. The sensor data is collected using microcontroller and transmitted using an XBee module to the server. At the server the data is processed and is stored in the database which helps in the generation of report on consumption of water. A solenoid valve is used at the water head, which turns off automatically whenever a heavy leak in the system is detected.

Keywords - Arduino UNO ; AT89C51 MC; Flow sensor; XBee.

I. INTRODUCTION

Water, "The Liquid of Life" is true in every aspect. The need for sustainable water supply systems is ever increasing. Though earth's 70% of total area is covered with water, about only 1% of total water is accessible for direct human usage and with the increasing demand for fresh water domestically and commercially in rural and urban areas, utilities can no longer tolerate inefficiencies in water distribution systems and the resulting loss of revenue associated with water system leakage.

Old and poorly constructed pipelines, inadequate corrosion protection, unauthorized connection, poorly maintained valves and mechanical damage are some of the factors contributing to leakage. Of the many options available for conserving water, leak detection is a logical first step. The traditional pipeline leakage detection methods depend on the periodical inspection conducted by the maintenance personnel but this does not provide real-time monitoring of pipes resulting in leakages that might not be detected in

time and thus causing the wastage of water in a large scale.

In this paper, we introduce a water distribution system which uses invasive sensors to detect the flow of water. This system is helpful in reflecting detection of the water leakage, generation of report on water consumption and indicates approximate location point of the leak. Some of the potential benefits of this system include efficient use of water supply, reduced risk of contamination and improved environmental quality.

The paper is organized as follows: in Section 2 an overview of the way in which a system works is given. In Section 3, software simulations are briefed. Section 4 and 5 are devoted to the description and the implementation of the hardware used, while Section 6 discusses the results. Conclusions from this work are summarized in Section 7.

II. PROJECT DESCRIPTION

The proposed water distribution system comprises of two parts, the transmitter or sensor and the receiver or server. In the transmitter part, water flow sensors are deployed inside the pipeline which generates pulses as the water flows through it. Pulses are then counted using microcontroller and sent wirelessly to the receiver end using XBee transceiver, which works on ZigBee technology. In the receiver part, the transmitted data are received and then processed using Arduino. The Arduino compares the data with predetermined threshold value to detect leak.

This processed information is passed on to the database over an established LAN. The GUI

Comparison of Compressed Sensing Techniques for Sparse Channel Estimation in OFDM system

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Abstract—Wireless channel impulse response is best represented as a sparse vector for recent Orthogonal Frequency Division Multiplexing (OFDM) system applications. Compressed Sensing (CS) is the most helpful solution to the sparse channel estimation problem. Many compressed sensing techniques are being researched and designed. This paper compares the performance and timing efficiency of L1 minimization, Orthogonal Matching Pursuit (OMP), Compressive Sensing Matching Pursuit (CoSaMP) and Subspace Pursuit under the cyclic prefix based OFDM system with equally spaced pilot pattern. Simulation results show that subspace pursuit has better performance in terms of Mean Square Error (MSE) of estimates.

Keywords— Compressed Sensing; CoSaMP; L1 minimization; OMP; Orthogonal Frequency Division Multiplexing; Sparse channel estimation; Subspace pursuit;

I. INTRODUCTION

Orthogonal Frequency Division Multiplexing (OFDM) is a method of encoding digital data on multiple carrier frequencies. It has high robustness to fading and high bandwidth efficiency [1, 2]. It is a multicarrier modulation scheme. Pilots are inserted with the subcarriers of data. Pilots help in non blind channel estimation.

Channel Estimation is a long standing and important problem in wireless communication. The transmitted signal characteristics are altered on passage over wireless channel. In order to perform efficient signal recovery, the channel effect has to be equalized. Some of the early methods for channel estimation usually included Least Square (LS) which would serve the purpose for rich multipath channel. However the practical problem is to estimate a sparse channel or in other words, a channel with only a few prominent coefficients. Urban LTE channels, 3GPP channels and digital broadcasting channels exhibit such sparsity in their channel impulse response [1].

Compressed Sensing (CS) approach is a solution to underdetermined systems such as the output of a

sparse channel. Basis pursuit and Matching pursuit are two sets of CS based recovery algorithm [5]. These algorithms are based on least squares approaches but function iteratively.

This paper presents the work done on comparing CS based techniques to estimate sparse channel in OFDM systems. Equally spaced pilot arrangement is implemented. Two sparse channels are considered. The MSE performance gives an insight of the accuracy of the estimate obtained from the CS based recovery algorithms like L1 minimization, OMP, CoSaMP and subspace pursuit. Timing performance is also analysed.

II. OFDM SYSTEM AND COMPRESSED SENSING THEORY

A. OFDM system

Orthogonal Frequency Division Multiplexing (OFDM) [2] is a multi-carrier digital modulation scheme that takes the concept of single subcarrier modulation further by making use of multiple subcarriers within a single channel. Instead of transmitting a stream of data at a high rate with a single subcarrier, OFDM will incorporate a large number of narrowly spaced orthogonal subcarriers that are transmitted in parallel. Modulation of each subcarrier is performed using a digital modulation technique (QAM, PSK, etc.) at a lower symbol rate. The combination of numerous subcarriers enables data rates comparable to single-carrier modulation schemes within equivalent bandwidths.

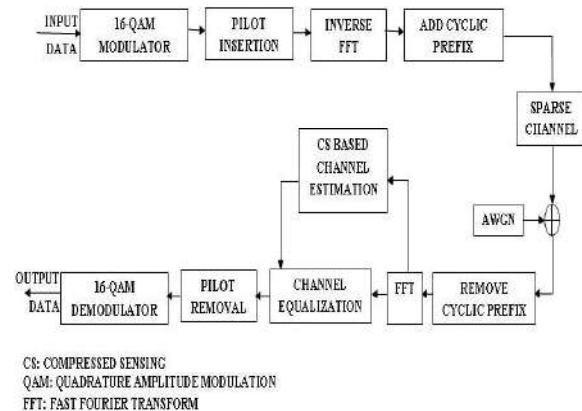


Fig. 1: Proposed system block diagram [2]

Fig. 1 shows the proposed system block diagram to realize the implementation of CS algorithms for sparse channel estimation in OFDM systems. The channel of

Smart Visual Acuity Measuring Device

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Abstract— Eye is the organ of vision which gives us sense of light and allows us to learn more about surrounding world. A regular eye examination would help us to protect our eye sight and alert us about the health of our eye at the earliest. Vision Acuity Test (VAT) monitors the status of the eyes by determining the smallest letters one can read on a standardized chart. The project consists of a model that is designed to perform the VAT and gives the results in the form of numerical indications. It can be performed without an ophthalmologist. The project is implemented using speech processing. Firstly, a letter with a large font is displayed on the screen and the user must read that letter to the microphone. A combination of Band Pass Filter (BPF) and audio amplifier band limits and amplifies the signal respectively. An ADC converts analog data to digital data. Further processing is done using Raspberry Pi 3. The programming language used is python. Depending on the correctness of the letter spoken, the size of the letter decreases or the result is displayed on the screen. If the user can read the smallest sized letter, he/she is said to have 20/20 vision, else a suitable indication is given.

Keywords—eye; eye examination; numerical indication; python; Raspberry Pi 3; speech processing; VAT

I. INTRODUCTION

Eye is the light of our body. It is our gateway to the world. So, it is very important to take good care of them. Visual acuity test is used to determine the smallest letters one can read on the standardized chart. It is a routine part of an eye examination.

Eyes play a vital role in our human body. Recent studies suggest that many people visit an Ophthalmologist on a regular basis to get their eyesight checked. Usually the people who work frequently with computers or use TV, mobiles etc suffer from eyesight problem and find it harder to take out time to visit an Ophthalmologist. The intent of this application is to check the vision acuity based

on the Snellen chart which an ophthalmologist uses to check eyesight of any patient. The advancement towards health related applications motivated us to focus on this issue. One of the major problem from which the current people are suffering is the problem of eyesight. This aspect motivated us to develop a device so that any person can check his/her vision acuity by using this device. Another advantage would be that this method of eye test would save the time a person would need to do a regular eye check up and the time a person would spend in waiting for an ophthalmologist.

The system incorporates a speech recognition system that takes speech as input, processes it and based on the processed values, decision is made. FFT, MFCC and merge sort algorithms are used to extract the features. To compare the extracted features and the dictionary values, DTW algorithm is used.

The computing language used is python. The Operating System used is Raspbian Jessie. The entire system is built around a Raspberry Pi 3 Model B.

The main goal of the project is to automate the VAT and display the results in the form of numerical indicators. The user must read the letter displayed on the screen. If the letter is read to the microphone correctly, the letter size decreases or else the numerical indication correspondingly to the letter size is displayed. The main objective of the project is to enable a person to carry out the VAT anytime, and anywhere. Also, the system must be portable, quick responding and cost efficient. The benefit of using speech processing is that it is user friendly

II. RELATED WORK

The project titled 'Speech recognition eye test' by Joel Llewelyn, Margot Haas and Yuchen Liu at Cornell University [1] describes the implementation of a device that performs the Snellen Eye Test. The system uses a PIC32 microcontroller. The coding is complicated and the implementation cost is found to be high.

Muhammad Atif Imtiaz and Gulistan Raja in [2] describe the digital processing aspects of speech signal and voice recognition. It focuses on MFCC as a feature extraction technique and DTW as a feature matching technique. These techniques are found to be reliable and showed good recognition performance.

Localization of Image Forgery based on the Traces of CFA Demosaicing

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Abstract - This paper aims at discriminating forged and original regions in an image by measuring the presence/absence of CFA demosaicing traces in the image. CFA demosaicing on an image introduces periodic correlations in the image and tampering removes the artifacts left by the demosaicing algorithm. The correlation produced by a demosaicing algorithm is quantified by means of statistical parameters like mean, variance and a feature that allows measuring the presence of demosaicing traces at a local level and thus allowing fine grained localization of forgery. The tampering probability of each 8*8 image block is derived by the efficient use of Bayesian approach and expectation maximization (EM) algorithm is used to classify each image block as original or tampered. The lack of correlation in any part of the image indicates tampering and it is detected without knowing in prior the position of the forged region and less human intervention. The results are obtained using MATLAB simulations.

Keywords - CFA artifacts; demosaicing; forgery localization; interpolation kernel; probability map; JPEG compression.

1. INTRODUCTION

The advancement in technology and image editing software, has made modification and manipulation of digital images extremely simple, presenting a threat to integrity and confidentiality of the images. With the availability of inexpensive and easily available imaging devices (digital cameras, mobile phones, PDA's etc.) the possibility of tampering and counterfeiting image content is no more restricted to experts. Current software allows to create photo realistic computer images that are indistinguishable from photographic images. Tampering threatens the authenticity of a given digital image and decreases the credibility of the digital images. This current scenario urges us to investigate the origin and trustworthiness of images before they are used as potential

evidences. Nowadays, in order to reduce the cost and size, digital imaging system makes use of a single image sensor chip (CCD or CMOS). Image sensors are made up of photodiodes that are monochrome devices i.e. they are unable to distinguish between different wavelengths of light. Therefore image sensors are overlaid with a mosaic pattern of color filters to filter out the red, green and blue components of light falling onto it. The mosaic of tiny color filters placed over an image sensor to capture color information is called Color Filter Array (CFA). Bayer CFA [shown in figure 1(a)] the most commonly used CFA pattern, employs three color filters red, green and blue. This array contains 50% of green filters and 25% of red-blue filters. The array is designed in such a way that half of the total pixels are green as the luminance response curve of the human eye peaks at around the frequency of green light. Under such an arrangement each pixel location has only one color sampled and to produce a full colored image the missing components are to be estimated at each spatial location from the available neighboring components using the concept of interpolation. This process is referred to as CFA demosaicing or CFA interpolation.

Several demosaicing algorithms exist for this purpose, varying from simple linear interpolation algorithms to complex nonlinear interpolation algorithms that exploit as much spectral and spatial and information as possible. In linear interpolation algorithms (bi-linear, bi-cubic etc.) each color channel is independently interpolated using only samples from the same color, but they do not maintain edge details. In more complicated linear algorithms (smooth hue transition, median based) interpolation is performed by considering the local pixel values of red, green and blue color channels. In nonlinear interpolation algorithms, the interpolation kernel is adaptive depending on the characteristics of the pixel values of the local neighborhood and they maintain edge information of an image.

H.264 Standard Video Compression

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Abstract—Video is the most useful and most appealing approach to represent some information. Today all the communication approaches are working with such kind of media. The only problem with such kind of media is its large size. Either we have to store the data in database or to transfer video over some communication medium, video size always affects the efficiency. Because of this video compression is required to save the storage space. In this paper, overview of H.264/AVC is explained and PSNR values are measured with and without using deblocking filter.

Keywords: DCT, Deblocking, H.264, Motion Estimation

I. INTRODUCTION

Video compression technologies are about reducing and removing redundant video data so that a digital video file can be effectively sent over a network and stored on computer disks. With efficient compression techniques, a significant reduction in file size can be achieved with little or no adverse effect on the visual quality. The video quality, however, can be affected if the file size is further lowered by raising the compression level for a given compression technique. The process of compression involves applying an algorithm to the source video to create a compressed file that is ready for transmission or storage. Lossless compression is preferred for archival purposes and often for medical imaging, technical drawings, clip art, or comics. Lossy compression methods, especially when used at low bit rates, introduce compression artifacts. Lossy methods are especially suitable for natural images such as photographs in applications where minor (sometimes imperceptible) loss of fidelity is acceptable to achieve a substantial reduction in bit rate. The lossy compression that produces imperceptible differences may be called visually lossless. H.264 is a lossy video compression standard.

II. H.264 TECHNICAL DESCRIPTIONS

These are the 4 main stages.

1. Dividing each video frame into blocks of pixels so that processing of the video frame can be conducted at the block level.
2. Exploiting the spatial redundancies that exist within the video frame by coding some of the original blocks through spatial prediction, transform, quantization and entropy coding (or variable-length coding).

3. Exploiting the temporal dependencies that exist between blocks in successive frames, so that only changes between successive frames need to be encoded. This is accomplished by using motion estimation and compensation. For any given block, a search is performed in the previously coded one or more frames to determine the motion vectors that are then used by the encoder and the decoder to predict the subject block.
4. Exploiting any remaining spatial redundancies that exist within the video frame by coding the residual blocks, i.e., the difference between the original blocks and the corresponding predicted blocks, again through transform, quantization and entropy coding.

On the motion estimation/compensation side, H.264 employs blocks of different sizes and shapes, higher resolution $\frac{1}{4}$ -pel motion estimation, multiple reference frame selection and complex multiple bi-directional mode selection. On the transform side, H.264 uses an integer based transform that approximates roughly the Discrete Cosine Transform (DCT) but does not have the mismatch problem in the inverse transform. In H.264, entropy coding can be performed using either a combination of a single Universal Variable Length codes (UVLC) table with a Context Adaptive Variable Length Codes (CAVLC) for the transform coefficients using Context-based Adaptive Binary Arithmetic Coding (CABAC).

III. H.264 BLOCK DIAGRAM

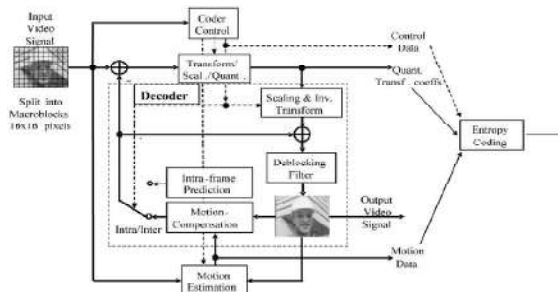


Fig. 1: Basic Coding Structure for H.264/AVC for a Macro block

A. Intra-Frame Prediction

Each macroblock can be transmitted in one of several coding types depending on the slice-coding

Extraction of Human Bodies from an Image

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Abstract - Detection and extraction of human bodies in an image are a challenging task that can facilitate applications, like activity recognition and detection of the human pose. This project focuses on extracting human bodies from an image into various parts. The extracted parts are classified into human body organs such as legs, arm, torso, and face. Face detection provides a strong indication about the presence of humans in an image, and gives information about skin colour and upper body. Face detection is done using Viola Jones algorithm. Colour of the skin in a person's face can be used to match the rest of his or her visible skin areas, making the skin detection process adaptive to each person the skin colour model involves extraction of chromatic colour from the image and removal of luminance. The upper and lower body can be extracted using watershed segmentation method.

Keywords - Viola Jones algorithm; Watershed segmentation; YCbCr colour model.

I. INTRODUCTION

Human body extractions from an image give rise to various applications like pose detection, activity recognition, video surveillance, human tracking and so on. Detection and extraction of human bodies from an image are a challenging due to several factors, including shading, occlusions, background clutter, the high degree of human body deformability. This project focuses on extracting a human body from an image into various parts. The extracted parts are classified into human body organs such as legs, arm, torso, and head. The result can be further applied to many useful applications. One useful application is parts recognition. Once the parts are recognized, they can be analyzed for gesture types for instance, the position of body parts can be interpreted to sitting, standing, or lying.

The different approaches for human body extraction are Bottom-up approaches [1] use low-level elements, such as pixels or super pixels, and try to group them into semantic entities of higher

levels, Interactive methods [2] that requires user input in order to differentiate the foreground and background they are not appropriate for real world applications. Top down approach [3] requires high-level knowledge about the foreground, which in the case of humans is their pose.

Extraction of human body can be divided into four sequential steps.

A. Face detection: Face detection shows the presence of a human in an image, and gives information about skin colour. This information guides the search for the upper body, and hence it will lead to the search for the lower body.

B. Skin detection: Colour of the skin in a person's face can be used to match the rest of his or her visible skin areas, making the skin detection process adaptive to each person. And hence the position of the person's hands and legs can be obtained using the person's skin colour.

C. Upper body segmentation: The torso is the most visible body part, connected to the face region and below it.

D. Lower body segmentation: Lower body lies below the upper body which helps to determine the lower body's position.

II. PROJECT DESCRIPTION

A. Face detection

Face detection provides a strong indication about the presence of humans in an image, and reduces the search for the upper body, and gives information about skin colour. The face detection

Visual Cryptography Schemes Using Matlab

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Abstract - Visual Cryptography Scheme (VCS) is a cryptographic technique where secret image (plaintext) is encrypted into shares (cipher text) such a way that decryption is simple OR operation. To make secure transmission of shares digital watermarking is applied to the shares. In VCS one whole image is considered as single secret level and same encoding rule is applied for all pixels of that image. But in Region Incrementing Visual Cryptography Scheme (RIVCS), different encoding rule is used for each pixel of different regions depending upon the secret levels. Visual cryptography is widely used in applications like Remote Electronic Voting, banking, Anti-Spambot safeguard, and in secure transmission of financial documents. Initial research was made on VCS where binary image is encoded into n number of shares but decoded image suffers from poor contrast and pixel expansion. Next is RIVCS by Wang, Wang's $(2, n)$ RIVCS where $k=2$ is a threshold and n is number of shares. Share is a part of secret image in unreadable form. Secret image is divided into multiple regions where each region has a different level of secret. Any t shares, can be used to reveal $(t-1)$ th region where $2 \leq t \leq n$. This is suitable only for $k=2$ and also suffers from incorrect-color problem (color of reconstructed images may be reversed).

To overcome this problem Yang et al.'s (k, n) developed RIVCS for any values of k and n where $k < n$. It reduces pixel expansion and enhances contrast. An approach is done for embedding shares into the host image to provide authentication to the shares by applying DWT (Discrete Wavelet Transform). Comparative study of all the schemes is performed. Yang et al.'s (k, n) -RIVCS gives comparatively better output with less pixel expansion and enhances the contrast when compared to the Wang's scheme and VCS.

Visual cryptography and region incrementing visual cryptography schemes

are performed on gray and binary images in this project. It can be extended for colour images and different watermarking techniques can also be implemented in order to increase the security.

Keywords - Visual Cryptography scheme (VCS); Region Incrementing Visual Cryptography scheme (RIVCS); Discrete Cosine Transform (DCT).

I. INTRODUCTION

Along with the quick advancement of network technology, it is very convenient to publish and transmit digitized data via internet. Various confidential data such as military maps and commercial identifications are transmitted over the internet. While secret images are transmitted, security issues should be taken into consideration because hackers may utilize weak link over communication network to steal information. In order to overcome the security problems of secret images, various image secret sharing schemes have been developed. Besides the information security becomes a very important issue nowadays.

M. Naor and A. Shamir [1] proposed Visual Cryptography scheme, the basic model was given by them where binary image is taken as secret image, which is divided into n number of shares. Each pixel of image is represented by m black and white sub pixels. Shares are decoded without any cryptographic technique. But decoded image suffers from poor visual quality and pixel expansion. Kafri and Keren [2] proposed a random grid based visual cryptography technique. In this technique size of pixel in reconstructed image is same as original image pixel size so it reduces pixel expansion problem. Each pixel is either transparent i.e. white or opaque i.e. black by a coin flip procedure. The number of transparent pixels and opaque pixels are probabilistically same.

R.Z Wang [3] proposed region incrementing visual cryptography technique

Data Mining Strategies in Automated Detection of Coronary Heart Diseases

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Abstract - Coronary heart diseases (CHD) are the cause of sudden cardiac deaths of nearly 8.14 million people around the world[1]. The mortality and morbidity of the patients suffering from this disease can be decreased by early detection of the symptoms of CHD. Early detection of the symptoms of Coronary Heart Diseases can be diagnosed using Electrocardiogram (ECG). Computer Aided Diagnostic systems which automatically processes the ECG signal using Recurrence Plot for any signs of Coronary Heart Disease have been developed[2].

This work compares these feature selection and classification technique combinations and computes their accuracy and performance in order to know the best suitable feature selection and classification technique combination in automated detection of the class of Coronary heart diseases. Comparing the performance of the feature selection and classifiers combination, ANOVA Test and Random forest classifier is chosen to be a better choice for classification of the class of the Coronary Heart disease since it gives a combined accuracy of 94.6667%.

Keywords – ECG; Coronary Heart Diseases; Recurrence Plot; Recurrence Quantification Analysis, ANOVA; Genetic Algorithm, Random Forest, Naïve Bayes.

I. INTRODUCTION

Coronary heart diseases are a cause of concern as they result in deaths of millions of people around the world. Globally coronary heart diseases alone have constituted over 5.2 million deaths in 1990, which rose to 7 million deaths in 2010, which has risen to 8.14 million in 2013[1]. Detecting coronary heart disease in earlier stages will help in avoiding life threatening critical conditions, also correctly classifying the class of coronary heart disease will help the healthcare professionals in the process of diagnosis.

Electrocardiogram (ECG) is the most feasible diagnosis tool for recording the electrical activity of the heart. Electrocardiogram (ECG) is a non-invasive test; it can be performed around the clock without causing any inconvenience to the patient, when compared to other tests. Several automated systems have been developed to detect abnormalities in ECG waveform, these systems are limited to classifying the ECG signal as normal or abnormal, and these systems are prone to errors such as misclassification.

The currently developed automated system uses nonlinear data analysis method of Recurrence plot and Recurrence quantification analysis to explore the underlying hidden recurrence patterns buried in the ECG signal [2]. The current work aims at comparing feature selection and classification technique combinations and computes their accuracy and performance in order to develop a better computer aided classification methodology to identify the class of the underlying Coronary Heart Disease.

II. RELATED WORK

The nonlinear data analysis method first segments the continuous ECG signal into single segments of ECG waveforms in order to extract the features of the ECG signal. Recurrence plot will be applied to each of the segmented single ECG cycles to obtain the features. Since visual analysis of these recurrence plots is not feasible in real time a computation mechanism of recurrence quantification analysis (RQA) which automatically analyzes the recurrence plot has been implemented [2]. The features obtained from this RQA will contain redundant and non relevant features which slow down the processing speed of the system and misclassify classes of coronary heart disease. In order to eliminate these redundant and non relevant features they are subjected to feature selection

Arrhythmia Analysis using K Nearest Neighbour, K Star and Random Tree

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Abstract - Electrocardiogram (ECG) is the indication of the electrical activity of the heart in terms of P wave, QRS complex and T wave. In medical domain analysis of the Electrocardiogram signal has got higher priority. Each part of the ECG signal contains hidden information which can be predicted only by physicians or cardiac experts. R peak of the ECG signal has got largest amplitude value and RR interval is helpful to analyse the heart rate of the signal. Sinus Bradycardia, Sinus Tachycardia and Normal Sinus Rhythm are the major classes of arrhythmia based on the heart rate. Classification of the ECG signal based on the RR interval feature is proposed in this paper and it has got the accuracy of 92.3%, 93.5% and 92% for K Nearest Neighbour, K Star and Random Tree classifier respectively. MIT-BIH Arrhythmia database is used for the implementation.

Keywords - Classifier; DWT; ECG; QRS Complex; RR feature.

I. INTRODUCTION

Software based detection of the any disease is a currently followed trend in the medical domain in order to automate the whole system. As part of this software based arrhythmia detection is performed in this work.

Figure 1 shows the representation of the normal Electrocardiogram signal. Arrhythmia is the abnormal electrical activity of the heart. At present, heart disease became a leading cause of death. Heart disease can be controlled effectively if it is diagnosed at an early stage. But unfortunately; accurate diagnosis of heart disease has never been an easy task. As a matter of fact, many factors can complicate the diagnosis of heart diseases, often causing the delay of a correct diagnosis decision. According to doctors ECG is not the only thing need to be considered to analyze Arrhythmia. Some other behavioral features like work pattern, mental stress, exercise of patient should also be considered [2].

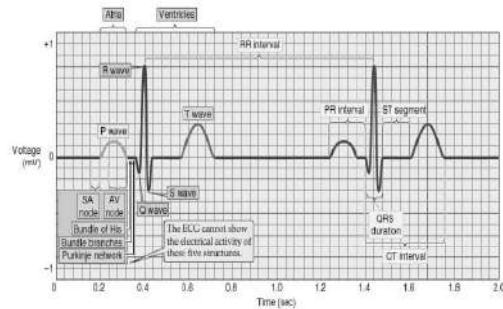


Figure 1: Normal Electrocardiogram signal [1].

One cycle of the electrical activity of heart is called an ECG beat. Ectopic beats result due to the defects in conduction or formation of impulse. One of the open source ECG databases is the Massachusetts Institute of Technology-Beth Israel Hospital (MIT-BIH) arrhythmia database [3].

Section 2 of this paper contains method and material used for the proposed work. It includes Database details, system details which explain entire details of the proposed concept. Next section includes the classification procedure used for the analysis. Section 4 contains the results of the experiment performed and final section concludes the work done.

II. METHOD AND MATERIAL

a. Database

MIT-BIH Arrhythmia database is used for the experimentation. This database contains 30 minute duration signal from 48 subjects. The sampling rate of the signal from this database is of 360 samples per second. Each subject in the database contains Header file, Data file and Annotation file. Patient's information, lead information and some other clinical data is included in the header file. Data file has got

Implementation of Adaptive Bit and Power Loading Algorithms in OFDM Systems

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Abstract - Orthogonal Frequency Division Multiplexing (OFDM) is a kind of Multicarrier Modulation (MCM) method which is popularly used in wireless communication systems that are affected by frequency selectivity. In this modulation scheme, a high data rate signal is divided into a number of low data rate signals. This paper presents an OFDM system to which link adaptation algorithms are applied. The OFDM system used in this project is a SISO (Single-Input Single-Output) system. Assuming that the channel condition is known both at the transmitter and receiver, the bit and power allocation algorithms are applied to each subcarrier. The project shows that the BER performance of wireless system is improved by applying link adaptation algorithms to the systems.

Keywords - Campello's algorithm; Chow's algorithm; MCM; M-QAM; OFDM; SISO.

I. INTRODUCTION

Nowadays, the need for wireless communications is increasing statistically. But, these requirements cannot be achieved because of less availability of frequency resources for wireless communications. Hence, the systems employing single carrier modulation need complex equalization since the signal undergo severe Inter-Symbol Interference (ISI) affect caused due to the dispersion. From many years, Multi-Carrier Modulation (MCM) has become the most popular method for many digital communication systems. In a MCM system, a high-rate data signal is split into many slow-rate data sequences and these are used to modulate a set of parallel sub channels that makes complete use of available bandwidth. A system employed with MCM scheme does not require complex equalizer at the receiver even if Inter-Symbol Interference is introduced by the channel. This property of MCM is very helpful in the case of time-dispersive channels and high-data rate signals.

Frequency Division Multiplexing (FDM) is a type of MCM scheme where the parallel sub channels are non-overlapping. The main disadvantage of FDM is that it will have huge loss of bandwidth. This problem has been solved by the invention of Orthogonal Frequency Division Multiplexing (OFDM). OFDM is a MCM scheme in which the parallel sub channels are overlapping and are orthogonal to each other. OFDM is an enhanced version of FDM. Because of the orthogonal property of these parallel sub channels, they can be easily recovered at receiver without severe problems. Hence, OFDM systems have high spectral efficiency [1], [2].

When all the subcarriers use the same type of modulation scheme in an OFDM system, the channel fading varies from sub channel to another. In order to overcome this problem, adaptive bit and power loading algorithms are applied to the OFDM system. Water-filling algorithm was one of the popular methods which was used for bit and power loading in OFDM systems. In this technique, the channel condition is not considered and the loading of bit and power to the parallel sub channels is carried out. But this proves to be inefficient, since in a wireless system the channel condition varies with time and it must be considered in the case of adaptive allocating the bit and power to the sub channels. Hence, to overcome this problem two algorithms are used for adaptive bit and power loading [3], [4]. They are Chow's algorithm and Campello's algorithm. By employing these two algorithms in an OFDM system, better BER performance can be achieved. This paper is organized as follows: Section 2 introduce OFDM system model, Section 3 introduces the idea of Adaptive modulation scheme, Section 4 consists the concept of bit and

Identification of fruit and subsequent automated peeling and cutting based on the type

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Abstract—Human beings are trained to identify different varieties of fruits and vegetables but time taken by the person for cutting or peeling of fruits and vegetables is more and it is not feasible with the requirements of a large kitchen. In order to minimize the time consumed in this process, a project is designed. This project has two parts. The first part of the system is based on image processing, which consists of capturing an image of the object, comparing it with the images stored in the database and identification of image. Accuracy achieved in this process is more than 90%. The second part of the project is segregation of the fruits or vegetables and cutting of the fruits or vegetables depending on the requirements. A hardware system is designed to perform the segregation and cutting process.

Index Terms—Regonization of fruits and vegetables, TensorFlow, Nvidia graphics, Cuda, Cutting mechanism based on type.

I. INTRODUCTION

Nowadays, automation process plays an important role in industries. Many automatic highly efficient methods are developed to use in various processes in industries. The topic of digital image processing has found many applications in the field of automation. Recognition system is an important field of computer science concerned with recognizing patterns, particularly visual and sound patterns. It is central to optical character recognition, voice recognition, and handwriting recognition. It uses methods from statistics, machine learning and other areas. Typical applications are text classification to recognize different type of texts such as spam and non-spam E-mails, speech recantation for specified purposes such as

translating different languages to English, handwritten recognition for postal codes, or the automatic face recognition which deals with digital images as input to the pattern recognition systems. In previous years, several types of image analysis techniques are applied to analyze the agricultural images such as fruits and vegetables, for recognition and

classification purposes. The fruits recognition system could be applied as an image contents descriptor which is able to describe the low level visual features or contents of the fruit images.

The most popular analysis techniques that have been used for both recognition and classifications of two dimensional (2D) fruit images are color-based and shape-based analysis methods. However, different fruit images may have similar or Identical color and shape values. Hence, using color or shape features analysis methods are still not robust and effective enough to identify and distinguish fruits images. A recognition approach for 2D fruit images is proposed, which combines color-based, shape-based, and size-based methods in order to increase the accuracy of the recognition result. System recognizes provided 2D query fruit image by extracting features values, including color, shape and size and computing extracted features values to measure the distance between the computed features values of query image with the stored standard features values of every fruit example.

Fruit Recognition System is an attractive and valuable system that has been developed based on various motivations. Hence, proposed system is developed to research on pattern recognition system, especially on fruits spherical pattern recognition and classification system. In this system, a pattern recognition system is designed that is combination of three different features together, including color, shape, and size to perform sequential pattern classification. This method can be applied as a useful tool for other object classification and recognition problems. The software solution is able to serve as a useful tool in a variety of fields, such as education, image retrieval, and plant science research. It can be applied for educational purpose to enhanced learning, especially for small kids and Down syndrome patients, of fruits pattern recognition and fruits features classification based on the fruit recognition result. It can be used as a fruit recognition system in grocery store to automate labeling and computing the price. The fruits recognition system could be useful for the plant scientists. Therefore the main goal of this work is to automatic recognize fruit image by classifying it according to its features using

Higher Order KCM For LDNP Based Face Expression Recognition

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Abstract- A detailed analysis of face and expression recognition based on Local Directional Number Pattern (LDNP) is carried out in this work and the statistics thus obtained are used to accomplish the task of face and expression recognition. An edge response in terms of direction and number differ from person to person and expression to expression and hence finds application in face and expression recognition. Choice of appropriate edge detection method is very important for finding the appropriate gradient magnitude of edges. Kirsch Compass Mask (KCM), a popular edge detection operator which uses a derivative approximation to find edges in a set of predefined directions is used in this work. An algorithm based on LDNP is then used for encoding directional informations from edge responses in an effective manner to get unique descriptor of the face. Face expression recognition and classification is accomplished by means of Bayesian classifier based on Chi-square dissimilarity measure. This work will be concluded with a performance comparison based on recognition accuracy of expression recognition using lower and higher orders of KCM.

Keywords - Face expression recognition, face feature, Gradient, Kirsch Compass Mask, Bayesian classifier, Chi-square dissimilarity measure.

I. INTRODUCTION

Edge in an image is a contour across which the brightness of the image changes abruptly. However, image data is discrete, so edges in an image often are defined as the local maxima of the gradient. An edge detector is basically a high pass filter that can be applied to extract the edge points in an image. The goal of edge detection is to mark the points in a digital image at which the luminance changes abruptly [2].

Edge detection is extensively used for object recognition, face and expression recognition,

target tracking, segmentation, and so on, and is considered to be one of the most important operations of image processing. Many edge detection methods are available in literature [2] namely, Sobel, Prewitt, Roberts, Canny. These methods have been proposed for detecting intensity transitions in images. Early methods determined the best gradient operator to detect sharp intensity variations. Commonly used method for detecting edges is to apply derivative operators on images. Derivative based approaches can be categorized into two groups, namely first and second order derivative methods [3]-[5]. First order derivative based techniques depend on computing the gradient in a set of predetermined directions and combining the result of each gradient. The value of the gradient magnitude and orientation is estimated using two differentiation masks. Kirsch Compass Mask (KCM) operators of dimensions 3×3 and 5×5 which can detect edges in eight and sixteen directions respectively are used in this work. The details of these edge detection operators are discussed in next sections.

The face and expression recognition is basically an effort to imitate the human ability to identify different persons and expressions by analyzing face. In person to person communication the face conveys lot of information. People, their expressions, age group, gender and so on can be identified by analyzing face. Apart from these, some cultural characteristics also can be deduced from face. For the same reason analyzing face in human-machine interaction is becoming increasingly important and many works have been done on the same. Edges in an image can convey a lot of information regarding the persons and expressions. Direction and number of edges in an image will vary from persons to person and expression to expression and hence, edge response can act as unique face descriptor in face and expression recognition.

Most of the shape information of an image is enclosed in edges, which can be horizontal,

Securing Fingerprint Based Biometric System

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Abstract - Nowadays biometric systems are in great demand. Biometric security systems are used to authenticate and provide access to a facility depending on the individual's physical characteristics. These characteristics which are stored in the database can be prone to theft. Hence there is a need to secure this identity which is stored in the database. Therefore in order to obtain a secure biometric system, two stages have been brought up. First stage is the enrollment stage, where two different fingerprints are taken and then two different features from each of these fingerprints are extracted. These two features are then fused to form a combined template and are stored in the database. In the authentication stage, the two query fingerprints are matched against the combined template which is produced in the enrollment. It is seen that the combined template is more secured and less prone to attacks.

Keywords - Biometric database security; Combined template; Minutiae; Matching; Orientation.

I. INTRODUCTION

The major domain of this work is biometric database security. According to a number of research reports, it is seen that the need for biometric security is growing rapidly. This technology is having a great demand in today's world since most of the mobile users have become comfortable to use the tools such as fingerprint identification access. Biometric approaches include a fingerprint, face, voice, vein pattern, hand geometry etc. Biometric systems are commonly used to control access to laboratories, buildings, ATMs, personal computer accounts, secure electronic documents etc. The three steps in biometric system are, (i) Collection of biometric data. (ii) This collected data is described using digital representation called a template. (iii) This new template is compared with the previously generated templates stored in a database. The result of comparing this template will be a match or a mismatch. This result will be used to either permit access, sounding alarm etc. If the acquired template is not similar to the stored template, then it will result in a mismatch else it will result in a

match. The degree of similarity required to result in a match declaration is called as threshold. Depending on the match score falling above or below the threshold, the acceptance or rejection of biometric data is decided. The major concern is that most of the times the databases which contain information of fingerprints could be stolen and misused. Since the biometric methods provide high levels of accuracy the threat of the intruder pretending like an authorized person and stealing his/her identity by obtaining this data is very high. Biometric readings cannot be replaced with another person from the valid person. Due to this other security issues like cutting off the finger of the valid person to gain access to a secure system might occur.

In order to avoid the harmful security threats occurring to the databases of a biometric system, the two different features of two different fingerprints can be combined to form a virtual identity [1]. Most of the techniques which are previously implemented make use of key for protecting the privacy of the fingerprint. One of them is the two factor authenticator based on the number of inner products between validated pseudo-random number and the users fingerprint feature, which produced a set of user specific code that is called as Bio-Hashing. It has achieved perfect accuracy [2]. A biometric system itself is vulnerable to a number of threats. In biometric systems a critical issue is to provide security to the template of a user which is typically stored in a database or a smart card. A biometric cryptosystem such as fuzzy vault construct secures both the secret key and the biometric template by binding them within a cryptographic framework, a fully automatic implementation of the fuzzy vault scheme based on fingerprint minutiae [3]. For privacy protection of the fingerprint template which is stored in the

An Efficient Approach to Perform Multiplication using Residue Number System

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Abstract - Residue Number System (RNS) represents a larger integer using a set of smaller integer for a set of selected moduli. The computation part of the RNS has an integer part multiplied with the selected modulo and a residual part. The selected moduli are absolute values, which are relatively prime. In RNS multiplication process the residues of the multiplier and multiplicand are obtained for special set of moduli and multiplied respectively to get the residues of final product. The conversion of RNS to Decimal Number System is done by Chinese Remainder Theorem (CRT).

In RNS multiplication process, multiplication of large numbers can be done at the same speed as on short numbers. The speed is determined by the largest modulo position. The computation complexity is decreased by representing the larger number as set of smaller numbers.

In this paper, a multiplier is implemented using CRT and Radix 8 Booth algorithm for RNS. This multiplier is checked for Power and Efficiency.

Keywords - RNS (Residue Number System); CRT (Chinese Remainder Theorem)

I. INTRODUCTION

Multipliers are the crucial components which play an important role in the design of processors. It is convenient to use multipliers with greater efficiency in the Arithmetic Logic Units (ALU's) of the processors. The best way to achieve efficiency in computational units of the processors is to have fast multipliers. Here efficiency is measured in terms of low power, high speed and smaller area.

RNS is an integer system which includes a carry free nature and has capability to perform high speed arithmetic operations [1]. RNS is very efficient in performing operations like additions, subtractions and multiplications. Since this process involves use of smaller integers in place

of larger integers in the arithmetic operations, the system can be efficiently used in the field of Digital Signal Processing (DSP), used in computations like digital filtering, convolution, correlation, Discrete Fourier Transform (DFT), Fast Fourier Transform (FFT), defend radio. The usage of equivalent small numbers in place of large numbers may lead to the reduction in the memory allocation and chip area in the processors. The delay may be produced in the ALU's while performing the operations like addition, subtraction and multiplication is due to the large number of bits as the input. To eradicate this problem it is convenient use the Residue Number System for reducing the word length. Bit Reduction Technique is one of the important techniques used in RNS. This can be achieved by applying modulo operation on a large integer which requires more number of bits when it is represented in Binary Number System. For example, consider a large decimal number $(1000)_d$ can be represented as $(1111101000)_b$ in Binary Number System which consumes 10 bits. The same decimal number $(1000)_d$ can be equivalently represented as $(1)_{RNS}$ in RNS by considering modulo 3. Hence the number of bit consumption is reduced to a single bit instead of 10 bits.

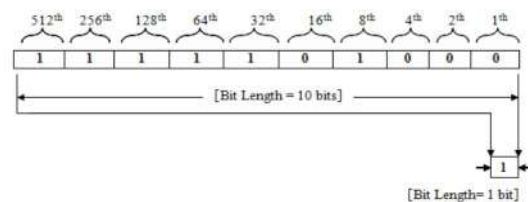


Figure 1: Bit Reduction Technique

Mathematically this can be shown by considering decimal integer $(1000)_d$ as X .

By applying the equation,

$$X = m_i \times q_i + r_i \quad (1)$$

Where, ' m_i ' is the selected i^{th} moduli integer in a moduli set,

' q_i ' is the quotient obtained for i^{th} moduli integer, ' r_i ' is the remainder obtained for i^{th} moduli integer.

Comparison of Iterative and Parallel CORDIC Architecture

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Abstract - The Coordinate rotation digital computer (CORDIC) algorithm is an iterative method for evaluation of trigonometric functions such as $\sin(x)$, $\cos(x)$, exponential functions, square roots and arithmetic operations like multiplication and division. CORDIC uses only shift, add operations to compute various trigonometric functions. This paper presents how to calculate sine and cosine values of the given input angle using CORDIC algorithm. CORDIC algorithm is implemented for folded and unfolded architectures. Iterative CORDIC architecture belongs to a class of folded architecture were, all the iteration are performed using single block. Parallel CORDIC architecture belongs to unfolded architecture, it consists of array of cells. Rotation mode is used to obtain sine and cosine of an angle. Comparisons are made between two architectures based on area, delay. The CORDIC algorithm will be designed using Verilog HDL and synthesized using Xilinx ISE Simulator and implemented on XILINX Spartan-3 FPGA

Keywords – CORDIC; LUT; Iterative architecture; Parallel architecture.

I. INTRODUCTION

CORDIC stands for Coordinate Rotation Digital Computer. The idea of CORDIC is based on simple and early principles of two dimensional -geometry. CORDIC method was born as a replacement for the analog navigation computer in B- 58 bomber. The CORDIC algorithm was first described in 1959 by Jack E. Volder and was capable of computing trigonometric functions such as $\sin(x)$, $\cos(x)$ and arithmetic operations like multiplication and division. CORDIC works by rotating the coordinate points through predefined angles until the angle is reduced to zero. J. S. Walther in 1971, varied few parameters, and described a unified algorithm which was able to compute elementary transcendental functions such as, logarithms, exponentials, and square

roots along with the functions that were suggested by Volder [1].

The Coordinate system and operation mode are two factors that are used to compute desired functions in CORDIC. Early scientific calculator used CORDIC for calculation. CORDIC algorithm is also known as digit-digit method and Volder's algorithm. It is a simple and a hardware efficient algorithm which makes use of only shift and adds operations to calculate mathematical functions without using multiplication. A CORDIC block consists of shift registers, adder/ subtractor units, and a lookup table. CORDIC belongs to class of linear convergence algorithm. CORDIC algorithm could be used in different applications using the basic shift-add operations of the form

The CORDIC algorithm has found its way in various applications such as pocket calculators, numerical co-processors, to high performance radar signal processing, supersonic bomber aircraft with a digital counterpart. The CORDIC algorithm does not use Calculus based methods such as polynomial or rational function approximation. The popularity of CORDIC was very much enhanced thereafter for a large class of applications which include, the generation of trigonometric, logarithmic and transcendental elementary functions, complex number multiplication, eigen value computation, matrix inversion, solution of linear systems and singular value decomposition (SVD) for signal processing, image processing. Although CORDIC may not be the fastest technique to perform these operations, it is attractive due to the simplicity of its hardware implementation, since the same iterative algorithm could be used for all these applications using the basic shift-add operations[2].

II. CORDIC ALGORITHM

The CORDIC algorithm involves rotation of a vector v on the x - y plane in circular, linear and hyperbolic coordinate system depending on the

OTA Based VCO for PLL

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Voltage Controlled Oscillator (VCO) forms the critical block of phase locked loop (PLL). This paper focuses on the design and simulation of CMOS Operational Transconductance Amplifier (OTA) based VCO for PLL integrated circuit using Cadence design suite, 180nm technology. The VCO designed has Voltage to Current converter (V-I converter) and a Current Controlled Oscillator (CCO). A CCO based on a single-ended rail-to-rail OTA, three CMOS inverters and the opamp based V-I converter is employed and tested in this work. The individual components are integrated to form the working VCO. The simulation results of the VCO exhibits a working frequency range of 60 to 435MHz. The VCO designed here is power efficient and would result in a low cost compact IC when fabricated.

Keywords— Cadence VLSI design suite; OTA; PLL; VCO.

I. INTRODUCTION

PLL is one of the basic building block in modern electronic systems. It is used to generate high frequency stable output signal from a fixed low-frequency signal for various applications such as, in processors for clock generation, in a variety of radio frequency applications, in frequency synthesizers for clock recovery and FM demodulation [1].

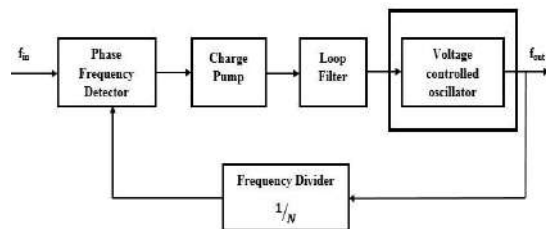


Fig 1: Block diagram of PLL

A PLL consists of Phase Frequency Detector (PFD), Charge Pump, Loop Filter, VCO, and a Frequency Divider. A VCO is a major block in PLL, which decides the power consumed and area occupied by the PLL [1].

An ideal VCO is a circuit whose output frequency is linear function of its control voltage. A conventional VCO is designed using odd number of inverters. The output frequency is controlled by varying the supply voltage of the inverters. However, the disadvantage of this design is the difficulty in controlling the output frequency. So in this paper, the concept of OTA based VCO is used where OTA as a buffer, helps in giving a full control on the output frequency [2].

The VCO designed in this paper consists of V-I converter and a Current Controlled Oscillator (CCO). The circuits are simulated at schematic and layout level using Cadence 180nm technology with supply voltage 1.8V. The working of PLL is analysed under different test conditions.

When compared to the previous works the VCO designed in this work has compact size and consumes less power. The operating frequency range of the designed VCO is 60 to 435MHz. This frequency range renders the designed PLL architecture to be used as clock generator in microprocessors. The system is found to have a better frequency control than that of the conventional ring oscillator.

II. PLL COMPONENTS

The block diagram of PLL is shown in Fig 1. PFD is a digital circuit that compares two signals and produces the phase error as output. PFD detects both the phase and frequency of the inputs (reference input frequency and feedback frequency). Charge pump charges or discharges the signal based on the lead or lag of the error

Performance Analysis of BER for CFO Estimator in OFDM System

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Abstract - Filter bank multicarrier systems provide high data transmissions over both wired and wireless frequency selective channels. One of the most well-known multicarrier modulation technique is orthogonal frequency division multiplexing. The principle of multicarrier modulation (MCM) is dividing broadband signal into many low rate signals, every signal is placed in narrower band. The project deals with the problem of frequency offset for orthogonal frequency division multiplexing (OFDM) system. Due to the frequency offset, OFDM system loses orthogonality between the subcarriers which in turn causes inter carrier interference. To overcome the above problem self cancellation method is developed. In this scheme, data symbol is modulated into even and odd group of subcarriers with weighted coefficients at the transmitter side. These coefficients are calculated such that the inter carrier interference due the frequency errors in channel can be minimized. The received signals on these subcarriers with predefined coefficients are linearly combined at the receiver side and the carrier interference in the received signals can be further reduced. This method is derived with reference to the AWGN channel and the performance of the derived offset estimators is analyzed in terms of CIR (carrier interference ratio) and BER (Bit error rate).

Keywords – OFDM(orthogonal frequency division multiplexing); ICI(inter carrier interference); carrier frequency offset.

I. INTRODUCTION

High rate of data transmission is the major challenges in modern communications, and it is very important for military and commercial applications. OFDM is used as part of the IEEE 802.11a standard in wireless local area networks to provide maximum data rate transmission over wireless communication systems [1]. A common problem of OFDM systems is sensitivity to inter

carrier interference. One of the main reasons for ICI (inter carrier interference) is loss of synchronization caused by offset in frequency between oscillators at the transmitter and the receiver. The offset in frequency between the transmitted and received signals can be caused by relative movement in the transmitter and receiver or by due to the frequency difference between the local oscillator of source and recipient. This carrier frequency offset causes loss of orthogonality between subcarriers and the signals transmitted on each carrier are not independent of each other, resulting into inter carrier interference (ICI). ICI lowers the signal to noise ratio and increases error probability.

In any digital transmission system to avoid inter symbol interference, delay time must be less than symbol duration. In single carrier modulation the delay time of the channel is limited. In Multicarrier modulation to avoid this problem input data is split into many sub streams of low data rate and these subcarriers then transmit on adjacent subcarriers. It doesn't affect the total bandwidth and it can be treated as parallel communication in the frequency domain [2]. In multicarrier modulation OFDM (orthogonal frequency division multiplexing) time and frequency synchronization are the two important aspects. In local oscillator high accuracy is usually not provided. If there is frequency offset present in OFDM system then orthogonality between the pulses will be corrupted.

OFDM is a modulation technique that achieves high data rates, increased band-width efficiency and robustness in multipath environments [3]. It is also used for short range communications for road side to vehicle communications and it can be used for fourth generation (4G) mobile wireless systems. OFDM has been also used for several wireless standards such as digital audio broadcasting (DAB), digital video broadcasting (DVB-T). OFDM exhibits much better bandwidth

Reducing the PAPR in OFDM System using SLM Techniques

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Abstract - There is progressive development in the field of communication that also in wireless technology. It gives us efficient transfer of data and developing idea for 4G communication. Orthogonal Frequency Division Multiplexing (OFDM) is used in 4G communications. OFDM system is a form of Multicarrier Modulation scheme where it suffers from high Peak to Average Power Ratio (PAPR). High PAPR causes nonlinearity in the system. Selective Mapping (SLM) technique helps to reduce high PAPR. PAPR is calculated, and which has got the minimum PAPR has to be transmitted through the channel. A SLM technique is compared with the linear coding technique and result is analyzed.

Keywords - Additive White Gaussian Noise (AWGN); Bit Error Rate (BER); Complementary Cumulative Distribution Function (CCDF); Inverse Fourier Transform (IFFT); Orthogonal Frequency Division Multiplexing (OFDM); Peak to Average Power Ratio (PAPR); Selective Mapping (SLM).

I. INTRODUCTION

OFDM is a parallel transmission scheme, where a high-rate serial data stream is split up into a set of low-rate sub-streams, each of which is modulated on a separate sub-carrier (SC). Thereby, the bandwidth of the SCs becomes small compared with the coherence bandwidth of the channel; that is, the individual SCs experience flat fading, which allows for simple equalization. By selecting a special set of orthogonal frequencies, high spectral efficiency is obtained because the spectra of the SCs overlap, while mutual influence among the SCs can be avoided. OFDM has two properties multiplexing and modulation. It divides single carrier into smaller carrier's means dividing the frequencies. The information is transmitted over the smaller carriers so it is multiplexing. [1-2] In the OFDM, at each point the sampling point of frequency domain one smaller carrier which is non-zero value and all other has zero value which obeys the orthogonal principle because the orthogonality in

the subcarrier it helps to reduce interference of the data and increases the system efficiency.

Attracting features of OFDM for the transmission of the information through the system are:

- Good spectral efficiency
- Resistance towards interference
- Flexibility
- Robustness to the channel fading
- Reliable transmission.

OFDM experience some inefficiency among them one issue is high PAPR. High PAPR will cause nonlinearity in the OFDM. A large PAPR brings drawback like an increased complexity of the analog-to-digital and digital-to-analog converters and a reduced the proper working of the RF power amplifier. There are various methods to lessen the effect of the PAPR and they are divided into three category. Firstly, Distortion techniques are clipping, peak cancellation and peak windowing and they reduce the PAPR by reducing the peak amplitude by distorting the OFDM signal at the peaks. Secondly, by using coding techniques on the OFDM signal it helps to lessen the PAPR. Lastly, Distortion-less techniques such as Selective mapping, partial transmit sequence, scrambling here this technique select the minimum PAPR.

PAPR techniques are distributed into two categories they are [3]:

- Distortion techniques: Distortion based PAPR reduction would reduce the signal to noise ratio transmitter or receiver.
Examples: Clipping and Companding.
- Distortion-less techniques: Distortion-less based PAPR reduction capabilities, effectiveness and low implementation complexities within range of subcarriers.
Examples: Selective Coding, Partial Transmit

Design of Canonical Signed Digit Multiplier using Spurious Power Suppression Technique Adder

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Abstract— One of the challenges faced in designing of integrated chips for smart handheld devices is reducing the power utilization in order to extend the battery lifetime so that device can be used for longer period. Due to the increased development in area of wireless technology and also in electronic devices such as smart phones, smart TV etc, Digital signal processing applications have found to be used in these kinds of environments. But some of the applications of DSP processing uses more complex algorithm for which processing of it consumes more power. Hence low power consumption techniques are required for designing the DSP applications in Very large scale integrated circuits (VLSI). There are different techniques which are developed for lowering down the power consumption but the results does not show much reduction in dynamic power consumption which governs the total power dissipation. The objective of this paper is to design a low power multiplier that uses the low power technique called spurious power suppression technique (SPST) that separates the arithmetic unit into most significant part and least significant part such that the MSP is switched off when it doesn't affect the computation results, thereby reducing the dynamic power so that overall total power consumption of VLSI combinational circuit will be reduced. Also one more technique that is used in the proposed system that takes advantage of one of the characteristics is the Canonical signed digit recoding technique.

The proposed system is designed in Cadence software and the results obtained for 32 bit SPST adder shows significant reduction of 35.8% in

power consumption and overall power consumption of proposed system is 0.561mW. Further the proposed system was used in power and area efficient 256 point FFT architecture, the results obtained showed reduction of 86.6% in power consumption.

This project can be implemented for real time application such as orthogonal frequency division multiplexing systems.

I. INTRODUCTION

Multiplication is a one of the basic function in the arithmetic operations. Multiplication based operation used in multiplier plays a vital role in area of DSP applications. In the multiplier, adders used to add the partial products obtained during multiplication process. If the number of partial products is increased, then more adders have to be used. Therefore the power consumption of the multiplier increases. As the technology is advancing, there is a requirement of multipliers with the reduced power consumption. Hence low power techniques are required to minimize the number of partial products and also to add the partial products efficiently.

Some of the low power techniques which exist that reduces the dynamic power consumption are explained in [1]-[7]. The design in [1] describes the concept of partially guarded computation technique in which the arithmetic unit is separated into two parts i.e. MSP and LSP and switch off the non-effective part to lower down the power consumption. Experimental results show that by using the PGC technique the power consumption in array multiplier is reduced to 10 to 44%. The design in [2] explains the concept of low power adder in which the identification of effective dynamic range is checked and then only that part of

Design and Simulation of Multimode Single Leg Converter for Energy Conversion

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Abstract Developed multimode single leg converter replaces bidirectional and boost converter in the conventional power conversion system. There-by increasing system efficiency and fault tolerance capacity. Proposed converter has four modes of operation and these modes are simulated using MAT Lab-SIMULINK. This power electronic technology can be applied to renewable & alternative energy generation systems and electric vehicles.

Keywords Multimode single leg converter, Bidirectional converter, Boosts converter, Renewable & alternative energy and electric vehicles

1. Introduction

Due to more consumption of energy and population rise worldwide causing environmental pollutions as well as oil price increment in recent years. Hence increase in natural gas and oil prices making people get attracted towards renewable energy sources such as solar energy, wind energy, fuel cells etc. Power electronics technology based conversion system can be applied towards "electric vehicles (EV) and renewable and alternative energy generation systems (RAEGS)".

In this energy conversion system, converters are used to boost up the generated energy from the renewable sources and this DC voltage is inverted to make it useful for home, industrial and automobile applications. Battery pack is the prime concern in power conversion system hence it is required to increase the size of the battery. As the size of the battery increased, stress on the battery as well as cost of the system increases. Hence ultra capacitors can be used to protect the battery and increase its life span.

It also improves system performance and power quality of the design. Aim of the conversion system is to reduce the conversion cost with simplified system structure. Therefore multimode converter with two switches on single leg is developed to reduce the cost of the system and make the circuit structure very simple.

Developed converter reduces the system cost by reducing circuit components because it operates as boost and bi-directional converter. Hence simple structure makes the diagnose of circuit easy and improves the efficiency of the

conversion. The performance characteristics of the system are also improved using this converter. Control strategy and protection of the design is very important to reduce the cost. By operating two MOSFET switches on single leg, we can achieve four modes of operations. These modes are simulated using MATLAB SIMULINK with appropriate control strategy.

2. Proposed Converter Topology

Power electronics technology based conversion system can be applied towards "electric vehicles (EV) and renewable and alternative energy generation systems (RAEGS)". This system is shown in Figure 1 which mainly comprises power generators, converter, inverter, battery/Ultra Capacitors and load. In this energy conversion system, converters are used to boost up the generated energy from the renewable sources and this DC voltage is inverted to make it useful for home, industrial and automobile applications. Battery pack is the prime concern in power conversion system hence it is required to increase the size of the battery. As the size of the battery increased, stress on the battery as well as cost of the system increases. Hence ultra capacitors can be used to protect the battery and increase its life span. It also improves system performance and power quality of the design.

Aim of the conversion system is to reduce the conversion cost with simplified system structure. Therefore multimode converter with two switches on single leg is proposed in this project to reduce the cost of the system and make the circuit structure very simple. This is illustrated in Figure 2. It consists of two MOSFET switches, two inductors, diode and battery storage.

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Portable Functional Electrical Stimulator for Post-Stroke: An Emerging Rehabilitation Tool for Stroke Patients

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Abstract Functional electrical stimulation (FES) is a technique that uses low levels of electrical currents to activate nerves innervating extremities affected by paralysis resulting from cerebral stroke, spinal cord injury (SCI), or similar conditions. This paper makes a study on functional electrical stimulator using power electronic systems which has wide medical applications. There are different types of stimulators available, but the stimulator discussed in this paper generates different patterns of waveform at the output to correct the foot drop. It is found that various patients require different stimulation pattern with different stimulation intensity. Therefore an important need-based objective is to design a functional electrical stimulator using power electronic systems to generate multi-pattern of stimulation intensities along with novel stimulus waveforms. In addition to the stimulation intensity control, depending on the patient's status, an effective stimulation control can be given with this stimulator.

Keywords Functional electrical stimulation (FES), Stroke, Spinal cord injury (SCI), Electromyography (EMG), Central nervous system (CNS)

1. Introduction

Functional Electrical Stimulation (FES) is primarily used to restore motor functions in people with functional disabilities such as foot drop. The objective of electronic stimulator is to elicit safely a controlled excitation in the desired group of nerve fibers or muscle fibers. An electronic stimulator for functional electrical stimulation (FES) application is a self-contained device with low power consumption, small size, light in weight, and user-friendly. It is able to provide a range of pulse widths, frequencies and intensities, which can be controlled and programmed separately to give repeatable treatment. The pulse generator circuit is made of integrated circuits of transistors, resistors, capacitors and a transformer [1]. The microcontroller is used to develop the stimulation pattern depending on the patient's status.

The output stage will generate constant current pulses of both polarities, in addition to this it also generates pulses with variable amplitude and duration, and regulates the frequency of stimulation.

All these features follow the "biological" activation of muscles to feel comfort during stimulation and to minimize the tissue damage. The train of pulses generated by oscillator is then modified and the output is amplified and

applied to a potential divider to regulate the output. [2].

2. Basic Design of Electronic Stimulator

There are different types of electrical stimulators. The main disadvantage of developed old age stimulators are bulky in size, an expert therapist is required to operate the stimulator, and cost is very high. Hence, these all demerits can be overcome in the portable and stimulation controlled FES. Effective application of a FES requires that the user have a decisive command of the activities as well as of the manner to execute them. The figure 2.1 shows the basic FES systems main components required for restoring motor function after an injury of the central nervous system (CNS) [2] like stroke, spinal cord injury (SCI). It consists sensor unit, main unit (electrical stimulator), and surface electrodes. Each subdivision can be individually assessed for correct operation, functionality and performance capabilities.

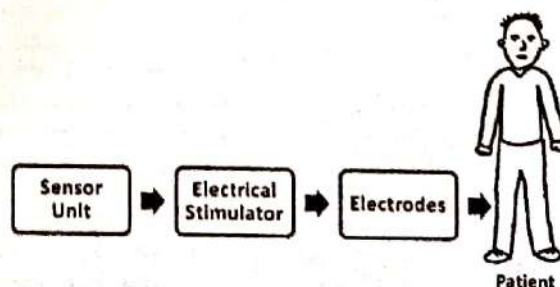


Figure 2.1. Block diagram of basic FES system

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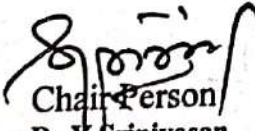
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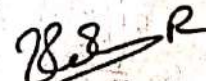
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Power Conversion using Multimode Single Leg Converter

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Abstract— Multimode power conversion system is proposed in this paper. This consists of multimode single leg converter which replaces bidirectional and boost converter. Proposed converter performs the function of boost as well as bidirectional converter there-by increasing system efficiency and fault tolerance capacity. Proposed converter has four modes of operation. These modes are simulated using SIMULINK. This power electronic technology can be applied to renewable & alternative energy generation systems (RAEGS) and electric vehicles (EV).

Keywords- *electronic vehicles, battery pack, power conversion, SIMULINK*

I. INTRODUCTION

In recent years increasing prices of oil and natural gases made sources of energy such as wind, solar and fuel cells very attractive towards industrial fields. Energy conversion Technology based on Power electronics can be applied towards electric vehicles and renewable & alternative energy generation system. But in such systems we have to be very much concern about battery management because these systems require battery pack of high density for the operation of the components. System performance can be improved by the use of ultra capacitors which also reduces the battery stress and protects the battery.

Generators, converters, inverters and battery are the main blocks of these systems and generally power conversion requires boost converter and power management requires buck- boost converter.

To overcome this problem, multimode single leg converter is introduced in this paper which performs the power conversion with improved system

efficiency. This converter has simple structure therefore diagnosis of problems are very easy. The proposed converter performs the function of both bidirectional and boost converter. SIMULINK is used to verify the performance characteristics of the proposed converter.

II. PROPOSED MULTIMODE SINGLE LEG POWER CONVERTER

System configuration of power conversion for RAEGS and EV is shown in figure 1. It contains energy source, main converter, battery/ UC and power inverter for ac loads. Figure 2 illustrates proposed circuit structure. In proposed circuit boost converter and bi- directional converter is replaced by multimode single leg converter which performs the function of both the converters simultaneously. This circuit consists of two power switches, two inductors and a power diode which can boost up the source voltage as well as charging/ discharging of battery.

There are four different modes to analyze the functions of the proposed circuit. They are (1) main boost mode, (2) boost-buck mode, (3) boost- boost mode and (4) battery boost mode. During main boost mode input voltage is boosted to output voltage.

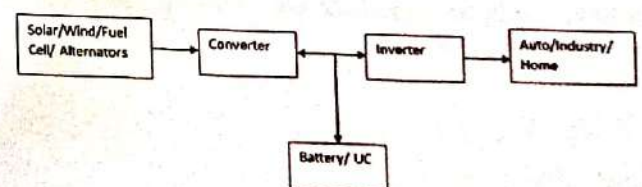


Fig 1: System Configuration of Power Conversion For RAEGS and EV.

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Smart Cane for the Visually Impaired

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Abstract Currently, visually impaired people use a traditional cane as a tool for directing them when they move from one place to another. Although, the traditional cane is the most widespread means that is used today by the visually impaired people, it could not help them to detect dangers from all levels of obstacles. In this context, we propose a new intelligent system for guiding individuals who are visually impaired or partially sighted. The system is used to enable visually impaired people to move with the same ease and confidence as a sighted person. Also the system helps in detecting the potholes. The system is linked with a GSM-GPS module to pin-point the location of the visually impaired person and to establish a two way communication path in a wireless fashion. Moreover, it provides the direction information as well as information to avoid obstacles based on ultrasonic sensors. A buzzer and vibrator motor are also added to the system. The whole system is designed to be small, light and is used in conjunction with the white cane. The results have shown that the blinds that used this system could move independently and safely.

Keywords Smart cane, Visually impaired, Ultrasonic sensor, GPS-GSM module

1. Introduction

Globally, the number of people of all ages living with sight loss is estimated to be 285 million, of who 39 million are visually impaired according to the World Health Organization (WHO). Among many constraints faced by a visually impaired person, the challenge of independent navigation and mobility is prominent. Generally visually impaired people rely on assistance of sighted persons to find their way or need an accompanying person to follow; at least during a training period. This means that the majority of visually impaired people cannot find their way autonomously in an unknown area. Generally visionless persons use a white cane or walking cane.

Electronic oriented technology like Ultrasonic sensor can be used to assist the visually impaired person. In this technology, energy waves are emitted ahead, then it is reflected from obstacles in the path of the user and detected by a matching sensor. Thus, the distance to the obstacle is calculated according to the time variance between the two signals. We have used different vibration intensities to indicate the distance of the object using the vibration motor. If the visually impaired person is too close to the obstacle the motor will vibrate at a higher intensity and also a buzzer will be turned on, alerting the visually impaired man to walk in different direction. In addition to this the smart cane will be linked with the smart phone, so that he can make use of

maps. GPS system is used by visually impaired persons to determine and verify the correct route and also if the person fell on the ground the GSM-GPS module receives the information from the GPS satellite and transfers the latitude and longitude information as SMS message to a predefined mobile number.

2. Characteristics of the Visually Impaired

A person who has been clinically determined to have a visual acuity of 20/70 or less in the stronger eye is diagnosed as visually impaired, while a person who is legally visually impaired is defined to have a visual acuity of 20/200 or less in the stronger eye. People whose visual acuity is at either of these levels receive governmental benefits, such as the right to possess a white cane or own a guide dog. A white cane is often carried by the visually impaired to give more freedom to the individual. The two main functions of the cane are identification and safety; it should alert the user to obstructions and changes in their path and also notify the seeing pedestrians and drivers that the user has some degree of vision loss. There are three types of white canes: identification canes, support canes, and long canes. Support canes have the same purpose as identification canes, except that they provide more support and balance for the legs and body of the user. Long canes, the type of cane chosen to be modified into a Smart Cane, reach the user's sternum and provide the most safety for the user, alerting them of terrain and height changes, walls, doors, and obstacles. They are also the most visible to others.

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Analysis And Simulation of Multimode Single Leg Bi-directional Converter

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Abstract: Power electronic technology based energy conversion can be applied towards electric vehicles and renewable & alternative energy generation systems. In this approach battery pack is the prime concern since it is used for energy storage. So it is important to pay more attention for charging/ discharging and power management. The system response improvement and battery protection can be achieved by ultra capacitors. Conversion systems using power electronics technology basically contains generators, converters, power storage and inverters. In this paper to reduce cost and increase the efficiency of power conversion multimode single leg power converter is introduced. This converter provides the function of boost as well as bi-directional converter. Hence efficiency and fault tolerance capability of the system is improved. In the proposed system there are four modes of operations. Each mode is simulated using MATLAB SIMULINK.

Keywords: multimode converter, conversion system, power management, MATLAB SIMULINK.

I. INTRODUCTION

In recent years increasing energy consumption, increasing oil and natural gas prices made energy sources such as wind, solar and fuel cells pay attracted attention towards industrial fields. Power electronic technology based energy conversion can be applied towards electric vehicles and renewable & alternative energy generation system. Since EV's require high density battery pack to start and operate the electronic components, battery charging/discharging and power management is of primary concern. Ultra capacitors are used to improve the system performance and power quality. It also protects the battery pack and reduces the stress.

These systems consist of power generators, main converters, and battery / UC and power inverters. Usually such system requires main boost converter for power conversion and buck boost converter for power management. But in this paper power conversion with reduced cost and simple system structure is introduced through multimode conversion. This system consists of multimode single leg converter which performs the function of both boost converter as well as bi-directional converter. Hence it improves system efficiency and it is also easy to diagnose the circuit since the structure is very simple.

The circuit performance characteristics are simulated using SIMULINK.

II. PROPOSED MULTIMODE SINGLE LEG CONVERTER STRUCTURE

Block diagram of a power conversion system for electric vehicles (EV) and renewable and alternative energy generation system (RAEGS) applications is shown in figure 1(a). It contains energy source, main converter, battery/ UC and power inverter for ac loads. Figure 1(b) illustrates proposed circuit structure. In proposed circuit boost converter and bi-directional converter is replaced by multimode single leg converter which performs the function of both the converters simultaneously. This circuit consists of two power switches, two inductors and a power diode which can boost up the source voltage as well as charging/ discharging of battery.

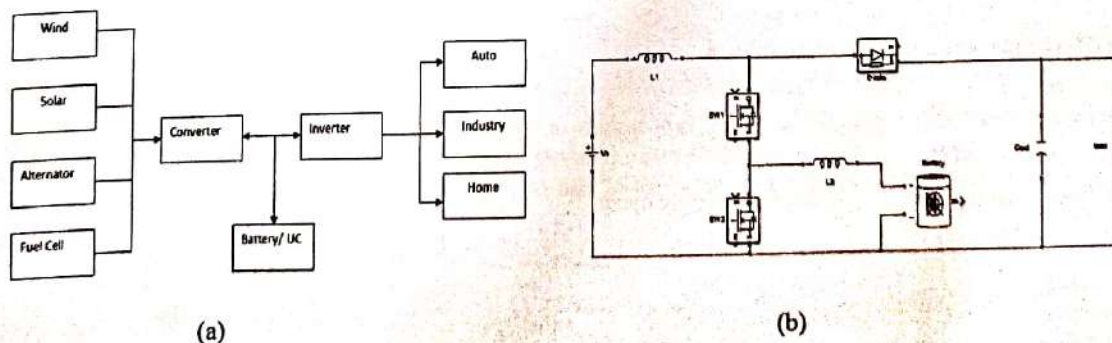


Fig.1. (a) Power conversion system configuration for EV and RAEGS. (b) Circuit of proposed multimode single leg converter.

High Efficient AC/DC Converter

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Abstract There is a continuous increased use of power electronic drive systems in the process industries such as paper mills. The topology of the power converters is being continuously evolved to improve the performance of the drive system. This work addresses such advancement in the power converter system used in the drive system. This project work proposes a single-stage High-Power-Factor AC/DC Converter that is derived from the integration of a Buck-Boost Converter and a Flyback Converter. Both converters share the same active switch. It results in reduction of component count, leading to low product cost. The Buck-Boost Converter serves as a Power-Factor Corrector (PFC) that is designed to operate at discontinuous-current mode to waveshape the input current to be sinusoidal and in phase with the input line voltage. A high power factor and high efficiency can be achieved. The Flyback Converter plays the role of the DC/DC Converter that provides an isolated output voltage with very low voltage ripple. The proposed circuit is with simple control. Besides, it can meet the design goals of high power factor, low voltage ripple and low product cost.

Keywords Flyback Converter, Buck-Boost Converter, Single-stage High-Power-Factor AC/DC Converter

1. Introduction

Due to the continuous advancements in Power electronics technology, the AC/DC Converters are widely used in many power apparatuses. Traditionally, an AC/DC Converter uses a bulky capacitor cascaded after a diode-bridge rectifier to obtain a smooth DC-link voltage which is further regulated by a DC/DC Converter operating at high-switching frequencies to obtain a stable DC output voltage. Such AC/DC Converter inevitably introduces highly distorted input current resulting in serious current harmonics and low power factor. With the goals of improving the power factor, an additional power conversion stage of Power-Factor-Correction (PFC) is included in the AC/DC Converter. In spite of its good performance, such a two-stage solution presents high cost and low efficiency.

Moreover, higher power losses are induced in two power-conversion processes, leading to low efficiency. The Literature survey reveals that are successfully proposed single-stage approaches by making the PFC and the DC/DC Converter to share the active switch. The component count can be effectively reduced. This Paper presents a single-stage AC/DC Converter based on the integration of a Buck-Boost-typed PFC and a Flyback Converter. It has the advantage of simple circuit topology since only one active switch and simple control circuit are required.

The Buck-Boost Converter serves as a Power-Factor

Corrector (PFC) that is designed to operate at discontinuous-current mode to wave shape the input current to be sinusoidal and in phase with the input-line voltage. A unity power factor can be achieved. The Flyback Converter plays the role of the DC/DC Converter that provides an isolated output voltage with very low voltage ripple. Since only one active switch is required, the proposed circuit is with simple control. Besides, it can meet the design goals of high power factor, low voltage ripple and low product cost [1].

The focus of the topology is to reduce the DC bus voltage at light load without compromising with input power factor and voltage regulation. Using special configuration of DC/DC cell does reduction of DC bus voltage and DC/DC cell works on the principle of series charging and parallel discharging. The power output of this converter can go up to 200 W [2].

Converters suffer from low efficiency because of high voltage and current stresses acting on switching devices and other circuit parameters. The introduction of resonant converters along with the conventional SSPFC provides a very sensible solution for the above mentioned problem. Normally two controllers are essential to perform the operation which cause increased cost and requires more processing time. This paper proposes a single PI controller to control the both variables to provide high converter efficiency and to reduce the cost and the processing time. The proposed system provides a constant efficiency in conversion process up to 50% of full load current [3].

The Flyback Converter type single-stage converter and a half wave rectifier with time-multiplexing control (TMC) for power factor correction has the advantage of better magnetic

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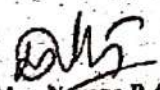
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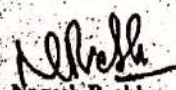
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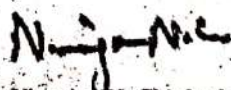
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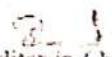
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Remote Controlled Floating-Waste Collector

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Abstract- Water is a basic need for all living being, it is important to maintain the cleanliness and hygiene of water. Overall ecosystem health is gravely affected by the accumulation of trash and plastics in the water bodies. Marine debris has demonstrated serious effects on beach tourism, the fishing industry, and recreational boating and fishing. Additionally, the mere presence of marine debris can disrupt an entire food web through its indirect impacts. Water gets polluted due to many reasons such as waste from industry, garbage waste, and sewage waste. Water from lakes and ponds are cleaned by traditional methods. So the solution has to be found to make our water bodies clean.^{[2][4]}

Keywords—racking system; boat structure; collector; motor driver; arduino; bluetooth;

I. INTRODUCTION

As of this day, the solution that is used to clean the floating waste in other countries is vacuum trash collector, a solar based water wheel collector, giant floating dam that traps plastic bags, bottles and other waste and even floating sea bins are used. But the main disadvantages of all these solutions is it has to be operated manually which is tedious work and inefficient. All this type of solutions is being used in different countries to ensure the quality of the surface of the water is good. But there is no such efficient solution to clean the floating waste. Collection of floating wastes in water manually, it's a tedious and inefficient process that does not help in the complete sanitation of the water from the wastes flowing over it. So it is necessary to design and build a floating solution that acts like a filter to collect the waste. So an efficient and an automatic or a remote controlled collector is required to overcome all these disadvantages.^[1]

II. COMPONENTS

A. A boat type structure- outer body

We have used plastic material as the boat structure as it is light weight and hence makes it easier for the boat to float as shown in fig 2.1.

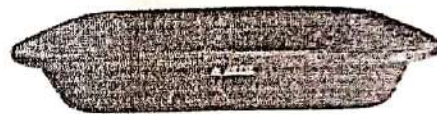


Fig 2.1: Boat type structure- outer body

B. Propeller- for the movement

A propeller is a type of fan that transmits power by converting rotational motion into thrust. A pressure difference is produced between the forward and rear surfaces of the airfoil-shaped blade, and a fluid (such as air or water) is accelerated behind the blade. We are using three bladed propeller as shown in fig 2.2.^[3]

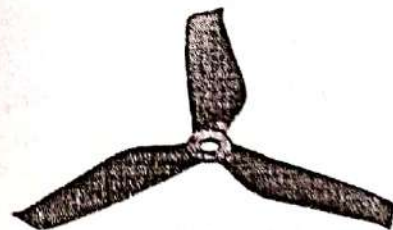


Fig 2.2: Three bladed propellers

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CLOSED LOOP FULL BRIDGE INVERTER TOPOLOGY FOR DOMESTIC INDUCTION HEATING APPLICATION

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ABSTRACT

Domestic induction heating (IH) is currently the choice in modern domestic application due to its advantages regarding fast heating time, efficiency and improved control. Induction heating applications require high frequency currents which are obtained using resonant converters. In this paper a novel DC-AC single phase inverter is proposed and simulated using MATLAB. When the switches are turned on and off, a conventional inverter generates switching loss because of the hard-switching. Thus the inverter loss is increased. Proposed system contains auxiliary circuit. The converter stage switches perform soft-switching because of the auxiliary circuit. Therefore all switches perform soft-switching when the switches are turned on and off. Thus the proposed system reduces switching loss and voltage stress for induction heating applications.

Keywords: induction heating, resonant converter, hard switching, soft switching.

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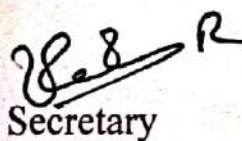
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Double Boost Converter for Photovoltaic Power Generation Systems with Load Variation

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Abstract: Photovoltaic (PV) system is capable of solving problems of global warming and energy exhaustion due to excess energy utilization. In this paper, a double boost converter for photovoltaic (PV) power generation system is proposed. The topology is used to increase efficiency and to reduce switching losses. The present topology is verified for 289W prototype.

Keywords: Double boost converter, maximum power-point tracking (MPPT), photovoltaic (PV) power generation system, resonant converter.

I. INTRODUCTION

Photovoltaic (PV) system consists of a number of cells. Each cell absorbs sunlight and convert it into electricity. Each cell produce a certain amount of power, hardly enough to power up certain applications. They are capable of avoiding unnecessary fuel expenses and they also avoid pollution or waste. By using photovoltaic (PV) systems, there is also reduction in noise because of the use of semiconductors. Solar cell can have a life cycle of more than 20 years and it also reduces the maintenance and management expenses.

By changing the irradiance and temperature, we can easily change the output power of cell and its efficiency is low. A power conditioning system (PCS) which transfers power from photovoltaic (PV) array to load requires high efficiency. Generally a single phase PV PCS consist of a DC-DC conversion stage along with tracking maximum power-point and under low irradiance guarantees the dc-link voltage [1], [2]. The paper proposes MPPT module in the feedback loop based on P&O algorithm which makes the system more efficient compared to the traditional open loop PV generation system.

The overall efficiency of PVPCS can be increased by using double boost converter [3]. In the proposed topology switching losses can be reduced by using the boost converter without using the additional switches required for full switching. [4]-[7]

The drawback is that during resonance mode voltage is high across the switch and it depends on the parameters of resonant components and resonant inductor current. In this paper, the resonant current is reduced by using an interleaved method. With high efficiency, the PV array output power can be boosted.

This paper presents the principle of operation of the boost converter, theoretical analysis and its simulation results. A simulation results for 289W prototype of the boost converter is built and is verified with the theoretical analysis. The block diagram for the proposed topology is given in Fig. 1.

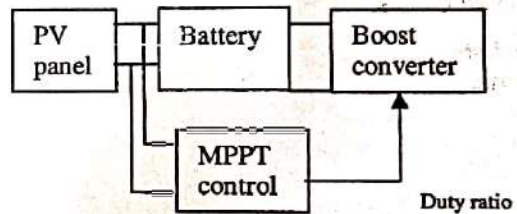


Fig. 1. Block diagram of proposed topology.

II. PROPOSED TOPOLOGY

A. Proposed Double boost Converter

The double boost converter consists of two parallel connected single phase boost converters. It is then connected to a output capacitor as shown in Fig. 2. It also consists of inductors, resistors, capacitors, diodes and switches. The duty ratio considered here is 0.9.

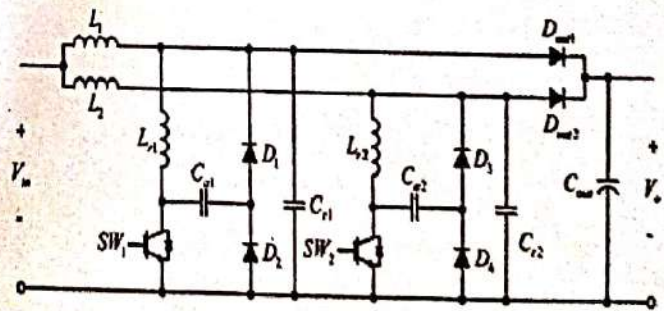


Fig. 2. Proposed single switch double boost converter.

Research Paper

ANALYSIS OF PHOTOVOLTAIC SYSTEMS TO ACHIEVE MAXIMUM POWER POINT TRACKING WITH VARIABLE INDUCTOR

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Photovoltaic (PV) system is the most promising source of energy and a new concept in use, which is obtaining popularity due to increasing importance to research for alternative sources of energy over exhaustion of customary fossil fuels worldwide. This systems are developed to draw energy from the sun, in the most competent manner. In this project Buck converter based PV system with resistive load is considered. The converter topology uses a variable inductor which provides adequate harmonic reduction. Employing the theorem that matching impedance yields maximum power transfer, a number of algorithms have been developed for Maximum Power Point Tracking (MPPT). In this paper Incremental Conductance with integral regulator MPPT algorithm has been used. The proposed system is simulated using Matlab/Simulink environment.

Keywords: PV, MPPT, Incremental Conductance (IC) algorithm

INTRODUCTION

The demand for energy is increasing particularly worldwide. Although the unavailability of fossil fuels had pushed us to towards finding the alternative sources of energy. Solar energy is the most important and sustainable energy system. Solar energy systems has a major role in distributed generation network. There are many other renewable sources of energy such as wind, tidal, biomass, etc. But the solar energy is

present everywhere which makes readily available than other renewable sources of energy that can be easily extracted and utilized. With the help of solar panel which is made up of silicon photovoltaic cells the solar energy can be converted into electrical energy. The efficiency of the solar systems depends on many factors such as insolation, temperature and spectral characteristics, dust, shading which results in poor performance. Currently more research has been focused on how to

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Closed loop speed control of dc motor using PID controller

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Abstract: This paper presents simulation and hardware implementation of constant speed dc motor, using Thyristor Bridge, which operates in two quadrants. The firing angle is controlled by PID controller and is given to Thyristor Bridge which intern control the armature voltage of dc motor. Pic microcontroller PIC16F877A is used to implement PID controller. Variable resistor is used to set the speed of motor. This project is done for 0.5Kw motor. Motor gives constant speed for the variation in input voltage.

Keywords: PID controller, fully controlled thruster bridge, PIC 16F877A,

I. INTRODUCTION

Dc motors are used in many industries, where frequent starting, reversing and braking is required. It has special characteristics, which provides precise speed control, regenerative strategy in contest of an active load for energy conversion [1]. In this project speed of the motor is controlled by controlling the armature voltage by fully controlled thyristor bridge. This provides forward motoring and regenerative braking. This is controlled by thyristor bridge and the input voltage is controlled by varying the firing angle. It is the easiest method and efficient method compared to other complicated methods. A constant speed is provided by PID controller. Proportional Integral and derivative control is extensively used due to its simplicity, stability and robustness[2]. In earlier days pid controllers were implemented using opamps. The constant Kp, Ki, Kd values are set by using resistor and capacitor. These are replaced by microcontrollers. Microchip PIC18F family has benefit of integrating large amounts of code in a single IC. All circuit values operations are written in terms of formulae and constants are can easily written in program by just by numerical values. These circuits and PID controller is prepared and tested in MATLAB and the kp, ki and kd values are tuned by trial and error method.

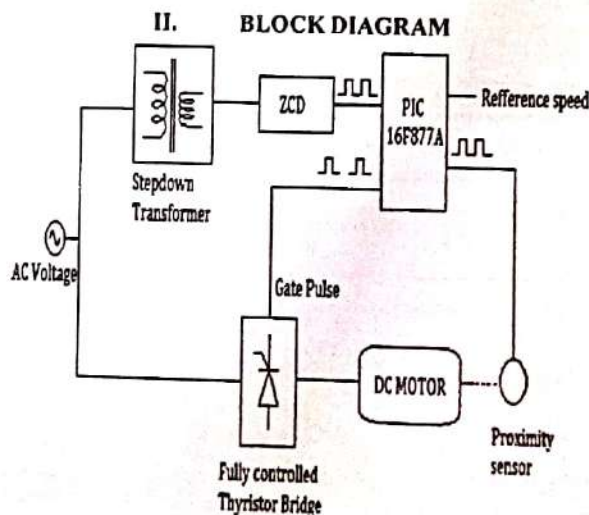


Fig:1 Block Diagram

The proposed speed control of DC motor shown in block diagram fig:1. Single phase ac input is given to step down transformer and also to the thyristor bridge. Using step down transformer the voltage is stepped down to 12v ac which is given to zero crossing detector to initiate pulse.

Research Paper

BOOST CONVERTER WITH MPPT AND PWM INVERTER FOR PHOTOVOLTAIC SYSTEM

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This paper presents boost converter with maximum power point tracking technique for photovoltaic system to extract maximum power from solar panel, and the system is connected with battery storage system, and cascaded with PWM inverter along with an RLC second order passive filter which outputs a stable AC voltage, which is not possible in traditional PV inverter system. The circuit operation principle, control strategy, and characteristics of the system are analysed in detail. Simulation results are shown to verify the theoretical analysis.

Keywords: Pulse Width Modulation (PWM), Maximum Power Point Tracking (MPPT), Boost converter, Passive filter (RLC), Grid

INTRODUCTION

As people are much concerned with the environmental problems and the fossil fuel exhaustion because of the conventional power generation, Renewable energy sources are becoming widely popular, due to which the cost of renewable energy sources are dropping, and new technologies are developed to efficiently utilize renewable energy sources [2].

Apart from power generation renewable energy sources are used in transportation system also. The photovoltaic solar panel is widely used in many grid connected and stand-alone application. It has several advantages like no noise, no installation area limitation,

and no additional maintenance cost but its installation cost is high and low efficiency and also due to non-linear characteristic it requires maximum power point Tracking. There are many different types of MPPT algorithms based on simplicity, time taken, and stability [6]. The DC-DC boost converter can achieve high boost gain, however high gain is restricted by switches used. The PWM inverter with RLC passive filter outputs almost sinusoidal output waveform.

The output can be either used for standalone load or can be integrated with power grid. Before connecting the system with power grid the output should be synchronized with grid parameters [1].

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Instantaneous Buck Boost Converter with better Transient effect for battery Power Applications using Micro-Controller

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Abstract: A transitional grouping mode of control is introduced using microcontroller for the buck boost converter. A constant output voltage is obtained by applying an input voltage from 8V to 14V along with increase in saturation. The price, efficiency, decrease in ripple in the waveform and voltage across the load can be superior. By introducing combination A and B between the three modes with better transient response which reduces the distortions in the output voltage. By using all the transitional combination mode, a ripple content will be decreased and efficiency can be better in the regulated output voltage.

Keywords: Combination Mode, Efficiency, Micro Controller, Saturation, Transitional.

I. INTRODUCTION

Obtaining a constant output voltage from a variable input along with increase in saturation is a very ordinary power-handling crisis, mainly for handy applications (power-driven by battery) like mobile set, personal digital assistants (PDAs), WI-FI modems (Wireless Fidelity), and advanced cameras. While the battery supply is either charged or discharged, the supply can increase, decrease or becomes equal to the output voltage. For a small size application, it is necessary to control the output voltage of the converter with high accuracy and operation. As a result, a transaction between the price, efficiency, and output transients must be measured. For a space controlled applications, a ordinary power-handling crisis power-driven by a battery is a regulation of voltage at the load is in the midrange of a variable input battery supply.

The use of a buck and boost converter can be lined out for an voltage applied in the range that is higher and lower than the voltage at the load unless it is cascaded. The use of this cascaded combination in converters that can result in cascaded losses and price. As a result, this method is rarely used. In such variety of power requirements, the changeover of dc voltage from one stage to other is normally capable by a process chopper circuits. For a power supplies with low-voltage-range, the essential points of concerns are wrinkles in the output waveform, efficiency, gap, and the price. For such power supplies the above said concerns are usually not implemented because of their lower efficiency, greater size, and price factors.

At the time of transition from boost mode to the buck mode, the spikes in the output voltages is the most difficult problem that makes the converter to reduce its efficiency. Price, size, switching speed, efficiency, and flexibility every things required to be known while designing such power supplies.

II. MODELLING OF BUCK-BOOST CONVERTER

A. Disadvantages of a common Buck-Boost Converter

A major difficulty related with the common buck-boost converter is the converter output is reversed. anyways it can be reversed, but it requires a transformer, that gets added to a price and space and sacrifice the converter efficiency.

B. Demerits by Using SEPIC Converter

The single ended primary inductance converter is a familiar buck-boost topology it needs additional components but produces a constant output. It has restricted efficiency and needs either two inductors or a transformer.

Thus, improve the size and price. Using of such components will result in losses, so it degrades the converter efficiency.

High Efficient Single Stage Bridgeless Step-Up Converter for Low Voltage Applications

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Abstract: A high efficient single stage step up converter is proposed to work as bridgeless circuit for energy harvesting applications. Bridgeless step up converter is an arrangement of boost and buck-boost converter. The proposed topology avoids the complexity of bridge rectifier and efficiently step up the input voltage, reduces the losses and shares the same inductor and capacitor for the operation of both boost as well as buck-boost converter and reduces the size of the converter. The Low-AC input voltage of 0.4v is rectified and boosted to dc output voltage of 3.3v satisfactorily and the results are achieved with the help of MATLAB software using simulink.

Keywords: Bridgeless, single stage, Energy harvesting, Low voltage Rectification

I. INTRODUCTION

The present world is suffering from scarcity of Power. Power Electronic converter are the key interface in energy harvesting system. Energy Harvesting is the process of electronically capturing and accumulating energy from a variety of energy sources or otherwise said to be unusable for any practical purpose. Energy harvesting sources include mechanical energy available from vibration, stress and strain, and other energy sources like biological, solar energy in all forms of light sources, electromagnetic energy that are captured via inductors, coils and capacitors. The devices such as sensors are typically used to convert unused energy sources and sunlight into electrical voltages and currents, which can then be harvested, stored and conditioned for many low voltage wearable electronics and wireless sensor applications therefore require AC power supplies or batteries.

Examples of Energy generators include materials such as, piezoelectric (PZT) crystals or fibre composites, solar photovoltaic cells, thermoelectric generators (TEGs), and electromagnetic inductor coils etc. In most cases, these sources provide energy as spurious, random and otherwise irregular energy spikes or very low level amounts to allow adequate energy capture and technologies did not exist to capture this energy with great efficiency. The Proper management of capturing and storing Low value of electrical energy charges can be achieved by Power

electronic Converter and required high energy efficiency harvesting electronics. The Fig 1 shows the Low Voltage energy harvesting system. Where the energy source available from Light or vibration or any other source is considered and is converted to AC by Transducer of lower magnitude level. Further it is converted to dc and stepped up to an adequate voltage level by power electronic converters to supply the low level Loads. Thus power electronic converters forms the interface between Transducer and electronic Loads

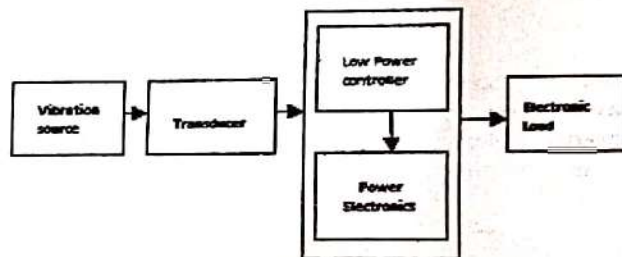


Fig. 1. Low Level Energy harvesting system

Since the AC power generated is in the order of few milli volts and the electronic load needs a dc supply of the order of a few volts, hence there are two stages involved in this conversion process. They are rectification and boosting processes. So the conventional power converters subjected for energy harvesting circuits consist of a diode bridge rectifier is. and a dc/dc converter for stepping up the voltage shown in the below Fig 2.

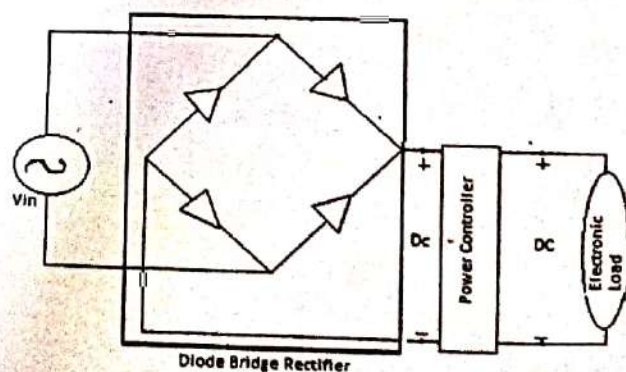


Fig. 2. Block diagram of conventional power converters



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CLOSED LOOP SPEED CONTROL OF DC MOTOR USING PID CONTROLLER

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ABSTRACT

This paper presents simulation and hardware implementation of constant speed dc motor, using Thyristor Bridge, which operates in two quadrants. The firing angle is controlled by PID controller and is given to Thyristor Bridge which intern control the armature voltage of dc motor. Pic microcontroller PIC16F877A is used to implement PID controller. Variable resistor is used to set the speed of motor. This project is done for 0.5HP motor. Motor gives constant speed for the variation in input voltage.

Keywords: PID controller, fully controlled thyristor bridge, PIC 16F877A

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Boost Converter with MPPT and PWM Inverter for Photovoltaic system

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Abstract—This paper presents boost converter with maximum power point tracking technique for photovoltaic system to extract maximum power from solar panel, and the system is connected with battery storage system, and cascaded with PWM inverter along with an RC low pass passive filter which outputs a stable AC voltage, which is not possible in traditional PV inverter system. The circuit operation principle, control strategy, and characteristics of the system are analysed in detail. Simulation results are shown to verify the theoretical analysis.

Index Terms—pulse width modulation (PWM), maximum power point tracking (MPPT), boost converter, passive filter (RLC), grid.

I. INTRODUCTION

As people are much concerned with the environmental problems and the fossil fuel exhaustion because of the conventional power generation, Renewable energy sources are becoming widely popular, due to which the cost of renewable energy sources are dropping, and new technologies are developed to efficiently utilize renewable energy sources [2]. Apart from power generation renewable energy sources are used in transportation system also. The photovoltaic solar panel is widely used in many grid connected and stand-alone application. It has several advantages like no noise, no installation area limitation, and no additional maintenance cost but its installation cost is high and low efficiency and also due to non-linear characteristic it requires maximum power point Tracking. There are many different types of MPPT algorithms based on simplicity, time taken, and stability [6]. The DC-DC boost converter can achieve high boost gain, however high gain is restricted by switches used. The PWM inverter with RC low pass passive filter outputs almost sinusoidal output waveform.

The output can be either used for standalone load or can be integrated with power grid. Before connecting the system with power grid the output should be synchronized with grid parameters [1].

This paper presents boost converter controlled with MPPT and SPWM inverter with RC low pass passive filter to ensure a sinusoidal output. The benefit of this paper is to give access to a pollution free source of energy.

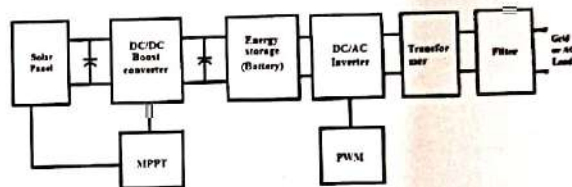


Fig 1. Block diagram of the proposed system

The solar panel is connected to DC/DC boost converter which is controlled by MPPT controller, the energy is stored in battery, SPWM inverter is used to convert DC to AC and filtered using RC low pass filter, the sinusoidal output can be connected to stand alone load or to grid. There are filter capacitors after each DC blocks to remove ripple contents [3]-[5].

II. DESIGN AND CONTROL STRATEGY

A. Photovoltaic cell

The electrical equivalent circuit of photovoltaic cell can be expressed in many ways, the simplest circuit is as shown below.

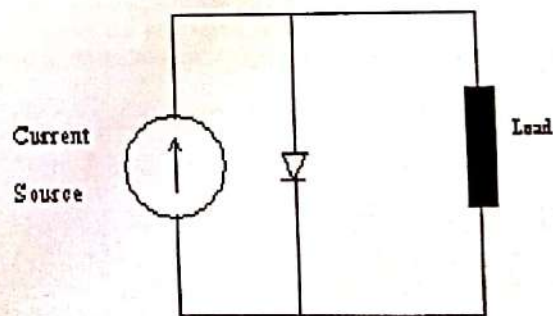


Fig 2. Electrical equivalent circuit of solar panel

$$\text{Load current: } I_L = I_{ph} - I_D(1)$$

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PHASE SHEDDING IN MULTIPHASE BUCK CONVERTERS TO IMPROVE THE EFFICIENCY

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ABSTRACT

With industry moving to higher performance platforms, efficiency of the power converter is critical. To improve the efficiency in this paper Phase Shedding is implemented in multiphase synchronous buck converter. In order to obtain the more efficiency in different loads in multiphase synchronous buck converter there is a requirement of phase shedding. Phase Shedding is disconnecting of phases in multiphase synchronous buck converter at different loads to get maximum efficiency in a particular load current. Working of multiphase synchronous buck converter with phase shedding is verified with the help of Mat lab / Simulink software.

Keywords: Multiphase synchronous buck converter, Phase Shedding.

1. INTRODUCTION

As processor based system, such as laptop and desktop computers, become more complex, more power is consumed by both active and standby system. Consequently, efficient power management solution for such a system imposes new challenges to energy management, especially for improved light load efficiency and extending battery life.[1] In power management applications, the multiphase converter with pulse width modulation (PWM) signals interleaved among the phases is widely used, since it provides several advantages in terms of input and output current ripple reduction, and faster transient response. When the load current is decreased, it is not necessary to continuously modulate all phases, since the load current can be shared among a reduced number of cells. The operation of disconnecting some phases at light load in order to improve the converter efficiency is usually denoted as "phase shedding" (PS). PS can be implemented with minimum output-voltage deviations and minimum transient-response time. In a more recent contribution, a PS with an adaptive voltage controller, based on the number of active phases, is proposed. The number of active phases is based on the inductor current measurement and the voltage loop (or droop controller) handles the transient due to the PS.

2. Ps IN MULTIPHASE BUCK CONVERTERS

The synchronous buck converter is used to step a voltage down from a higher level to a lower level. With industry moving to higher performance platforms, efficiency of the power converter is critical. Multiphase synchronous buck converter consists of a MOSFET, Shottky diode, inductor, capacitor and load. A diode is placed in parallel with the MOSFET to provide a conducting path for inductor current during the dead time when both MOSFETs are off. This diode may be the MOSFET body diode, or it may be an extra diode or Shottky diode, for improved switching.

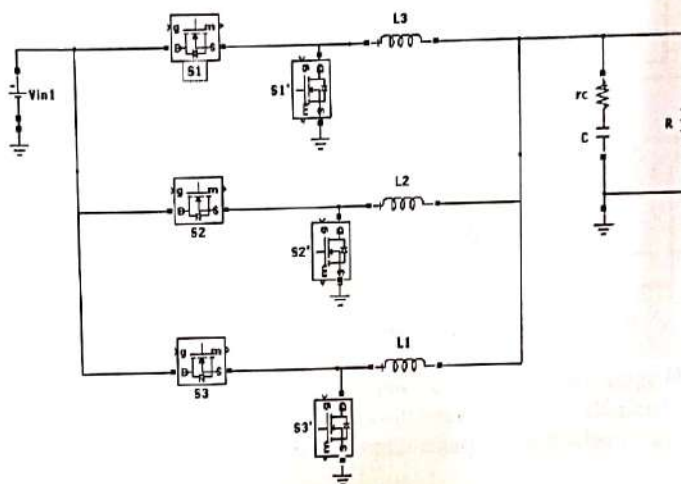


Fig.2.1: Basic Scheme of a Multiphase Buck Converter

Consider only two switches ie $S1$ and $S1^1$. When $S1$, the high side MOSFET, is connected directly to the input voltage of the circuit. When $S1$ turns on, current is supplied to the load through the high side MOSFET. During this time, $S1^1$ is off and the current through the inductor increases, charging the LC filter. When $S1$ turns off, $S1^1$ turns on and current is supplied to the load through the low side MOSFET. During this time, the current through the Inductor decreases, discharging the LC filter.

Advantage of this configuration is that the MOSFETs will have a much lower voltage drop across it compared to a diode, resulting the high current efficiency. This is especially important in low-voltage, high-current application. A Shotty diode have a voltage of 0.3 to 0.4V across it while conducting, where as a MOSFETS will have an extremely low voltage drop due to an RDs on as low as single-digit milli ohms. So this circuit is known as synchronous rectification or synchronous switching.

3. SIMULATION AND RESULTS

3.1 Open Loop Analysis

3.1.1 Single stage N=1 for synchronous buck converter

Sliding Mode Idle Speed Control of IC Engine

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Abstract In order to have the reduced fuel consumption Engine speed at idle position should be low. But, since idle speed is set at low value, even slight fluctuations of the idle speed due to torque disturbances cause not only deterioration of vehicle performance but also unpleasant vibrations of the vehicle. Therefore, the primary goal of the idle speed control is to maintain a desired engine speed despite of torque disturbances. Dynamic modeling is an essential front end to control design. Sliding mode controller is designed for nonlinear engine (IC Engine) idle speed control. Simulation of the designed controller is carried out in MATLAB/SIMULINK. Simulink model of IC Engine is developed by interconnecting air, fuel and torque subsystems. The results indicate the ability to minimize idle speed variations under the rapid torque disturbances and the system nonlinearities/uncertainties.

Keywords Idle speed control, IC Engine model, Sliding mode control, Throttle

1. Introduction

The engine idle speed should be as low as possible for reduced fuel consumption. At low idle speed slight fluctuations of the idle speed due to torque disturbances could cause not only deterioration of vehicle performance but also unpleasant vibrations of the vehicle. Therefore, the primary goal of the idle speed control is to maintain a desired engine speed despite of torque disturbances.

Automotive idle speed control (ISC) is a multivariable control issue. The selection of target idle speed corresponds to a tradeoff among fuel consumption, idle operation stability, and emission levels. On an average, about 30% of fuel consumption [2] in a city driving is spent at idle, and it continues to increase with increasing traffic levels. A reasonable target idle speed needs to be maintained in order to overcome mechanical frictions, misfiring, and load disturbances to prevent engines oscillation, vibration, hunting, and stalling under a variety of circumstances. At idle, both rich air to fuel (A/F) mixture and incomplete combustion are present due to in-cylinder residual gas fraction and low engine speed, giving rise to higher levels of HC and CO emissions.

The primary goal of the ISC is to remain a desired engine speed despite of both the system nonlinearities/uncertainties and external torque disturbances due to the following reasons: air conditioning, power steering, alternator torque, and engagement of automatic transmission. In most vehicle engines while idling, the amount of air is controlled via a

throttle bypass valve. The bypass valve also provides additional air during starting and prevents stalling as well as facilitates smooth transitions from higher engine speeds to idle speeds. In order to fulfill ISC system requirements model and control of IC Engine is necessary.

Sliding mode control method has recently been developed as an alternative to linear control methods in number of application areas such as robotics and power plant control. It is a nonlinear controller design method that is directly applicable to set of nonlinear dynamic equations and directly considers the robustness to model errors and disturbance uncertainties in the design process. These features make this method highly desirable for designing a closed-loop controller.

2. Engine Dynamics

Three State Engine Dynamics

The engine model for a four stroke spark ignition engine was developed by Moskwa and Hedrick [6]. It was subsequently refined and used for different studies. The engine is continuous time model with three state variables given by,

- the mass of air in intake manifold;
- the engine speed;
- mass flow rate of fuel entering combustion chamber

The following state equation is obtained by applying law of conservation of mass to the air flow in the intake manifold.

$$\dot{m}_a = \dot{m}_{ai} - \dot{m}_{ao} \quad (1)$$

Where, m_a = mass of air in the intake manifold; \dot{m}_a = mass rate of air in the intake manifold; \dot{m}_{ai} = mass rate of

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Field Oriented Control of Induction Motor-A Literature Review

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Abstract: Field oriented control has achieved new heights in controlling Induction Motor under steady state and transient conditions. This paper presents a brief survey of development of field oriented control in last two decades. The survey indicates that the key for achieving controllability of induction motor as good as that of DC motor is due to the decoupling of current responsible for production of torque and no load flux. In further advancement, artificial intelligent techniques are adopted for developing adaptive controllers.

Keyword-Field Oriented control, Fuzzy logic Controller, Artificial intelligent techniques

I. INTRODUCTION

Performance of speed controller of induction motor can be substantially improved by controlling the flux and current producing the torque independently. Field oriented control can be classified as direct and indirect method of speed control. Rotor resistance plays an important role in determining orientation of field in case of indirect method. In case of direct field oriented control method, knowledge of magnitude and orientation of rotor flux is required. Due to non availability of rotor current in case squirrel cage induction motor rotor flux must be estimated through observer. Main problem associated with vector control is poor performance of controller under transient conditions like, starting, stopping, sudden variation in load etc. This is due to variation of motor parameters like rotor resistance. The following sections provides a review of literature on advancements in the field oriented control of Induction Motor Dives [1-2]

II. A PARDIGM SHIFT FROM DC DRIVES TO AC DRIVES

A DC motors have excellent speed controllability because of which they were used in most of the applications. This is due to the fact that two independent circuits are present for production of flux and torque. The main drawback of these drives is mechanical commutator which needs regular maintenance. Induction motor is very robust and requires very less maintenance. It became suitable for high performance applications due to advancement in the theory called vector control theory. According to this flux and torque producing current components are controlled separately. Research in the

fields like digital signal processing, power electronics, simulation tools, field programmable gate array (FPGA), artificial neural network, fuzzy logic had major role in emergence of high performance induction motor. [3-4]

III. OBSERVERS FOR FIELD ORIENTED CONTROL OF INDUCTION MOTOR DRIVES

Observers for field oriented control are classified as full order and reduced order observers. Reduced order observers are easier to implement compared to full order observers. Full order observer parameters depend on speed as well as on the slip of the motor. Estimation of observers will go wrong if errors are present in observer parameters. This is due to variation in rotor resistance due to variation in temperature. Closed loop observers with faster response are less sensitive to parameter variation. [5]

IV. STATOR RESISTANCE AND ROTOR RESISTANCE TUNING METHODS

Depending on the method used for determining flux vector orientation field oriented control is categorized as direct and indirect control methods. In direct control of field orientation flux vector is determined using stator terminal quantities. In case of indirect scheme it is achieved using the value of machine slip frequency.

Field oriented control of either type requires machine parameters. Indirect control scheme require induction machine inductance value and time constant of rotor. Direct field orientation scheme requires stator resistance value. Determination of these parameters is difficult and the values of these parameters are changing during the operation. Depending on type of method employed variation in parameters are going to influence the controllability of the drive negatively.

In stator flux oriented direct control method stator resistance value is dominant in low speed region. Effect of variation in its value at high speed range is negligible. A closed loop stator resistance estimation scheme developed to reduce the effect of change in stator resistance at low speeds.

Indirect method of field oriented control mainly depends on estimation of motor slip, which is mainly influenced by rotor time constant. When open loop current model observer is used,

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Superlative Vehicle

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Abstract Social and human demands promote the development of automobile technology. For general vehicles, the auxiliary driving or automated driving is from a safe and comfortable level to solve human driving requirements. As the growth of the social demand for cultural and health care, the demand is bound to be reflected during the vehicle driving. It is important to consider the driver who may be in fatigue, illness and disability. In this paper, we aimed to provide maximum customization satisfaction for all drivers by introducing three special and unique features particularly for existing vehicles along with the consideration of safety of drivers in emergency situations.

Keywords ADD-automatic dim-dipper, Geo tagging, GPS and GSM module

1. Introduction

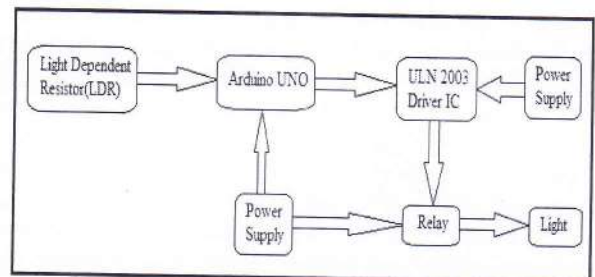
This project is focused on three special features namely ADD system, Smart braking system and Geo-Tagging system. ADD system keeps the correct head light lighting power in accordance with the opposite vehicle light or any light source intensity. By knowing the opposite vehicle light intensity value, the brightness of the light is varied. This system is accurate, reliable and provides comfort to all drivers during night time. Smart braking system used to keep the vehicle secure and protect it by the occupation of the intruders. Many accidents at High-ways are taking place due to the close running of vehicles, all of sudden, if the in front vehicle driver reduces the speed or applied breaks, then it is quite difficult to the following vehicle driver to control his vehicle, resulting accident. To avoid this kind of accident, Smart braking system comes into an effective use. After the occurrence of accident, many victims lost their lives because of failure of emergency treatment, this might be due to without passing proper information to a authorized people in a proper time. This can be avoided with the help of Geo-Tagging system.

2. System Overview

2.1. ADD System

The density of vehicles on our roads rapidly increasing day by day. This forced almost all this vehicle manufactures to think about the extra safety derived in all road conditions.

You must have come across this irritating situation while driving at night when you find the headlight lamps focus from an opposite vehicle falling straight in your eyes, making things difficult to assess, giving rise to a situation of a collision or some kind of possible accident. So naturally to get rid of this problem, an automatic mechanism has to come up to dip and dim the headlamp automatically whenever required.



Block Diagram of ADD System

The circuit described here can be built and used in your vehicle for an automatic dipping and dimming operation of the headlamps, in response to the intense lights coming from an opposite vehicle headlamps. The arduino UNO is used as a comparator, which compares the preset resistance level and the LDR resistance level with reference to ground. When light falling over the LDR from the headlight of the vehicle coming from the front, then the arduino triggers the ULN2003IC. This driver IC activates the relay, which in turn flips the contacts such that the host vehicle's headlamp gets connected with the low beam filament. As the opposite vehicle crosses the host vehicle, the headlamps gets connected back to high beam filament. This method simple yet effective automatic control of vehicle headlamps can be achieved.

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Development of Study Model for Automation of Water Pump Using LabVIEW

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Abstract In this paper water level monitoring system is developed. Water Level monitoring will help in reducing the home power consumption and water overflow. In this system a water level sensor has been used, which will control the level of water in the tank. When the water level in the tank goes below a predetermined level, the signal will be sent to turn ON the pump and when water level in the tank goes above a predetermined level a signal will be sent to turn OFF the pump. The signals to turn on and turn off the pump are sent through sensors via NImyDAQ. The same program is interfaced with LabVIEW. On the front panel of LabVIEW the visual representation of level of water in the tank and motor turning ON and OFF can be graphically visualized.

Keywords LabVIEW, NImyDAQ

1. Introduction

Water is a precious resource in many parts of the world and many people rely on water tanks to supplement their water supply by storing collected rainwater or water pumped from a well or bore but measuring of water within the tank is very difficult. Tanks are constructed of opaque material to prevent algae growth and are often kept closed up to prevent mosquito infestation or access by rodents, so it's inconvenient to physically look inside the tank and measure the level of water in the tank. Besides, having a way to measure tank depth electronically opens up a world of possibilities, such as automatic control of pumps to fill tanks when they get low or to disable irrigation systems when not enough water is available.

During these days of high rise Buildings, apartments, Commercial houses and Industries, it has become necessary to store water in overhead water storage tanks. Since water pressure in most localities is not sufficient, water is pumped from ground level tank to overhead tank for storage & use. It is very difficult for someone to monitor water level in ground and overhead tanks and switch ON & OFF water pump accordingly. So a water level controller prevents overflow & dry running of your water pump, thus saves water, electricity & manpower.

In this system, to develop a study model we have assembled two buckets which represents the underground

tank and overhead tank respectively. The water level in the overhead tank is controlled with the help of relay circuit using the NImyDAQ and LabVIEW interfacing. A water level sensing device in this case is an ultrasonic sensor placed in the upper tank to sense the water level. A pump is placed in the lower tank to pump water to the overhead tank. Whenever the water in the upper tank is beyond the determined level the NImyDAQ and LabVIEW arrangement gives signal to the relay circuit thus turning pump ON and OFF according to the requirement. LabVIEW is used so that the graphical and visual operation can be obtained.

2. System Components

2.1. Ultrasonic Water Level Sensor

A level sensing device is designed to measure the level of flow substances including liquids, slurries and granular materials [1]. There are also continuous level sensors; these sensing modules can only detect the level of flow of a substance with a specific range.

A water level sensor is a device used in the detection of the water level for various applications. Water level sensors are of several types that include ultrasonic sensors, pressure transducers, bubblers, and float sensors.

Ultrasonic sensors operate by transmitting sound waves that reflect from the liquid surface and are obtained by the sensor [1]. The sensor measures the time interval between the transmitted and received signals, which is then converted into distance measurement with the help of electronic circuits within the sensor thereby measuring the level of the liquid.

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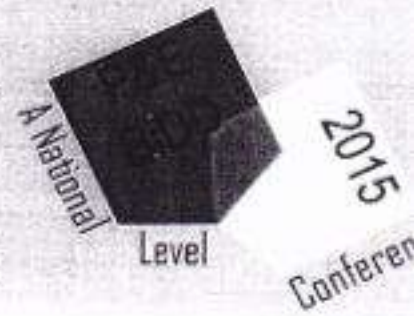
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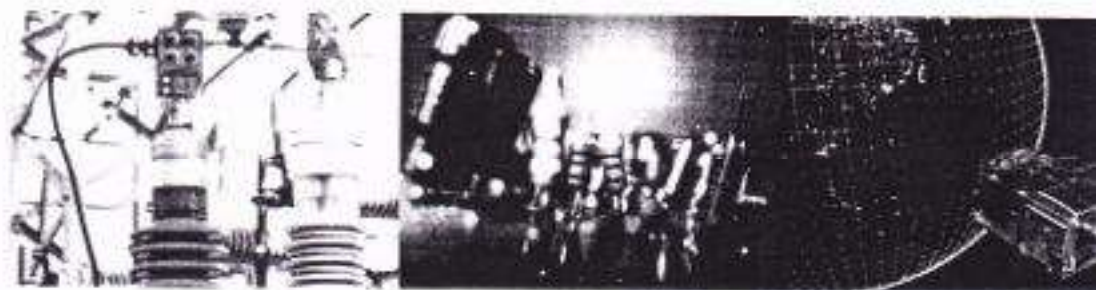
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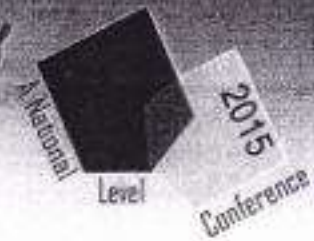


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A HIGH EFFICIENCY BUCK-BOOST CONVERTER

WITH REDUCED SWITCHING LOSSES

In the National Level Conference on

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A High Efficiency Buck-Boost Converter With Reduced Switching Losses

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Abstract—This paper proposes a high-efficiency buck-boost converter with reduced switching losses. Four power transistors generate more conduction and more switching losses when the positive and negative buck-boost converter runs in buck-boost mode. Utilizing the mode-select circuit, the projected converter can reduce the loss of switches and let the buck-boost converter run in buck, buck-boost, or boost mode. By the addition of feed-forward techniques, the transient responses are improved when the supply voltages are changed. The analysis and design method of the proposed work is carried out using MATLAB/Simulink.

Keywords—Feed-forward techniques, mode select, buck-boost, converter, Matlab/Simulink.

I. INTRODUCTION

Today we are using many portable devices such as LED products, notebooks, mobile phones, and car electronic products. And these products use the power converter for application[1]. The challenges for the designer to provide consumers better conveniences are, to improve the conversion efficiency of power converters & to extend life of battery. Hence it is required to design a accurate switching power converters to reduce the more wasted power energy in the converter. It is necessary to provide a regulated non-inverting output voltage from a variable input battery voltage to portable applications which suffer from the power handling problems. As the battery voltage can be greater than, less than or equal to the output voltage. Hence for this small scale application such as battery it is desirable to control the output voltage of the converter with performance & accuracy. Thus, one should consider a transaction among efficiency, output transients and cost[1]. In order to maintain a constant output voltage from a variable input voltage there are a various topologies that need to be implemented. For instance single-ended primary inductance converters (SEPICs), inverting buck-boost converters, isolated buck-boost converters, Cuk converters, boost converters and cascaded buck converter. The points of concern for such low-voltage-range power supplies are the efficiency, output ripple, the cost and the space. The above mentioned topologies due to the lower efficiency, high size and cost factors are usually not implemented for such power supplies[3]. Transitions will takes place during the charging & discharging of the battery. During the transition

from buck mode to the boost mode the converter loses efficiency & it leads to the spikes in the output voltage. The higher efficiency gives the advantage of longer runtime from identical set of batteries at a given brightness level. While designing such power supplies the size, cost, switching speed, flexibility and efficiency should be considered. To decrease the loss of switches, it is essential to avoid power converters operating in buck-boost mode as the positive buck-boost converter runs in wide-range supply voltages[2]. Therefore, the battery energy is detected by designing a mode select circuit and respective operation mode is selected. Only two power transistors are switched on when the converter runs in buck or the boost mode. The mode-select circuit can decrease the conduction loss and switching loss of the proposed buck boost converter, and the power efficiency can be improved.

This new topology is simulated using MATLAB/Simulink simulation software and simulation results prove that, the design ideas work as expected.

II. CIRCUIT OF NEW PROPOSED TOPOLOGY

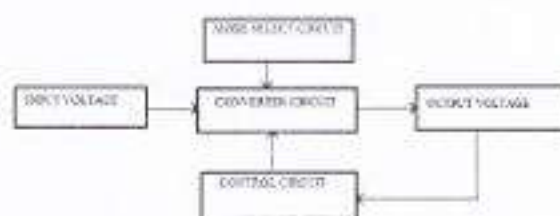


Fig. 1. General Block Diagram

The buck-boost mode is necessary to present a smooth and stable transition among the two modes [1]. The converter can run in buck, buck-boost and boost modes when the battery voltage decreases. When the input voltage is given to the converter circuit depending on the mode select circuit one of the three converters performs in their respective way[2]. To decrease the loss of switches, it is essential to avoid power converters working in buck boost mode. Therefore, a mode-select circuit is designed to sense the battery energy and select the operation mode. When the converter runs in buck or boost mode, only two power transistors are switched on. The mode-



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A New Step-Up DC-DC Converter for Isolated Power System

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Abstract— In this paper, a new step up dc-dc converter with a coupled inductor for isolated power system. Theoretically the conventional boost converter provides high step up voltage gain but in practical it is limited by reverse recovery problem of diode, effective series impedance of inductors and capacitors and switching losses. High charged current and conduction losses occur in the switch when voltage lift and switched capacitor techniques are used. In the proposed strategy a coupled-inductor and two capacitors is utilized to achieve high step-up voltage gain. High power loss and voltage spike on the switch is avoided using passive clamp circuit that recycles the leakage inductor energy. The operating principle and steady-state analysis are discussed. The Proposed topology was simulated using Matlab/Simulink environment and the following results were obtained. For an input voltage of 24V, an output of 393V was obtained.

Keywords— High Step-up, Coupled Inductor, Distributed Generation (DG), Reverse-recovery, Gain.

1. INTRODUCTION

Driven by economical, technical, and environmental reasons, the energy sector is moving into an era where large portions of increases in electrical energy demand will be met through widespread installation of distributed resources or what is known as distributed generation (DG) [1]. Distributed generation (DG) systems based on renewable energy sources have rapidly developed. The DG systems are powered by micro sources such as fuel cells, photovoltaic cells, batteries, and micro turbines etc., and have already been used to share peak generation during peak load hours when energy cost is high and to provide standby generation during system outages.

Being a systematic organization of DG systems, a micro grid has larger power capacity and more control flexibilities to fulfill system reliability and power quality requirements, in addition to all the inherited advantages of a single DG system [2].

This boost converter theoretically can provide a high step-up voltage gain with an extremely high duty cycle but in practice, the step-up voltage gain is limited by the effect of the power switch, rectifier diode, and the equivalent series resistance of the inductors and capacitors.

Conventional boost converters cannot provide such a high voltage gain, even for an extreme duty cycle. It may also result in serious reverse-recovery problems and increase the ratings of all devices [3]. As a result, the conversion efficiency

is degraded, and the electromagnetic interference (EMI) problem is severe under this situation. To increase the conversion efficiency and voltage gain, many modified boost converter topologies have been investigated in the last decade.

The dc-to-dc converters comprising high-frequency transformers can provide a high voltage gain, but their efficiency is drastically degraded by losses associated with the leakage inductors, which induce high voltage stress, large switching losses and serious electromagnetic interference (EMI) problems [4].

The converters using a coupled inductor with an active-clamp circuit have been proposed. An integrated boost-fly back converter is presented in which the secondary side of the coupled inductor is used as a fly back converter. Thus, it can increase the voltage gain. Also, the energy of the leakage inductor is recycled to the output load directly, limiting the voltage spike on the main switch. Furthermore, the voltage stress of the main switch can be adjusted by the turn ratio of the coupled inductor [5].

To attain a high step-up gain, it has been proposed that the secondary side of the coupled inductor can be used as fly back and forward converters. Also, several converters that combine output-voltage stacking to increase the voltage gain are proposed. To achieve high step-up voltage gain and high efficiency, this paper proposes a new step-up ratio and clamp-mode converter. The proposed converter adds two capacitors and two diodes on the secondary side of the coupled inductor to achieve a high step-up voltage gain. The coupled inductor can charge two capacitors in parallel and discharge in series. Though, the leakage inductor of the coupled inductor may cause high power loss and a high voltage spike on the switch. Therefore, a passive clamping circuit is needed to clamp the voltage level of the main switch and to recycle the energy of the leakage inductor [6].

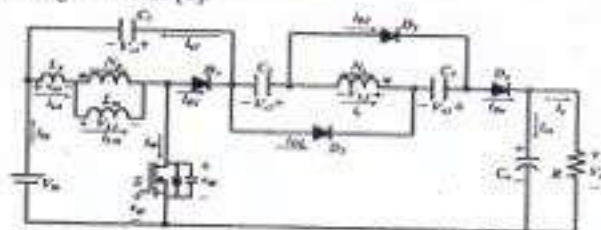


Fig. 1. Circuit configuration of the proposed converter.

A Novel Boost Resonant Converter for Solar Renewable Energy Applications

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Abstract—Photovoltaic power conditioning requires efficient power conversion and maximum power point tracking to counteract the effects of panel mismatch, shading, and general variance in power output during a daily cycle. An integrated boost resonant converter with low component count, galvanic isolation, as well as high efficiency across a wide input and load range is proposed in this paper. The proposed circuit is simulated using Matlab/Simulink and the results are obtained.

Keywords— Integrated boost resonant (IBR), isolated dc-dc microconverter, LLC resonant converter, photovoltaic (PV), Matlab/Simulink.

I. INTRODUCTION

The growth of the electrical energy demand along with awareness of environmental impacts from the continuous utilization of fuels has led to the survey of renewable energy sources as photovoltaic technology. The free and richly available solar energy can be converted into electrical energy using photovoltaic (PV) cells. PV sources have the advantages of low maintenance cost, absence of moving/ rotating parts, and pollution-free energy conversion process. Their main disadvantages are low energy conversion efficiency, nonlinear v-i and p-i characteristics. PV voltage varies considerably with panel construction and operating temperature, while the PV current changes largely due to solar irradiance and shading conditions [1]. In spite of these disadvantages, PV systems have become one of the most popular substitutes to the conventional energy resources such as water pumping, refrigeration, air conditioning, electric vehicles as well as, military and space applications.

Power conversion for solar renewable energy applications, requires a compliant system that is adept of responding to a wide range of input voltage and current conditions. The fundamental unit required to connect a PV system to utility is the inverter which converts dc input to an ac output. The utility network consists of ac generation transmission and distribution.

Since PV panels produce dc current this causes some difficulty. To adjust the dc source to ac system power conditioning system is required. If a converter is designed only for high peak efficiency, the range of conditions common

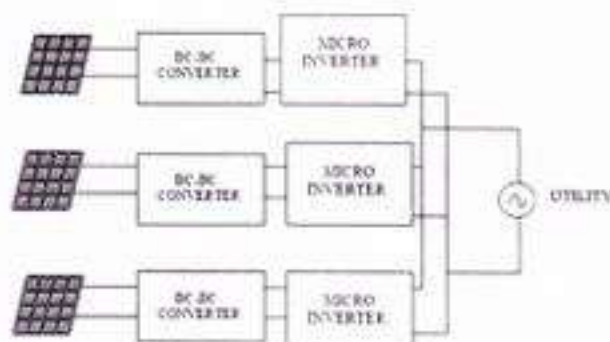


Fig.1. Distributed microinverter structure.

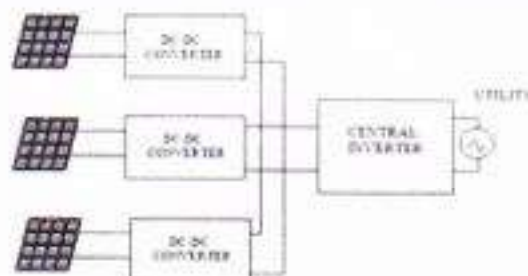


Fig.2. Distributed microconverter structure.

to many PV installations will force the converter into another operating region where it is much less efficient.

More important in the PV PCS design process is the need of galvanic isolation between the PV panel and the electric utility system. Galvanic isolation is preferred for several reasons such as improved voltage boost ratio, reduced ground leakage current, and overall safety improvement during fault conditions [2].

Block diagrams showing the microinverter and microconverter structures are shown in Fig. 1 and Fig. 2. PV panels connected in parallel can be more useful than a series connected system [4]-[7] and Maximum power point tracking

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Power Optimization in Dc-Dc Converter for Photovoltaic System using Matlab/Simulink

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Abstract— In this paper the mathematical model of photovoltaic cell is developed for Boost converter. The Maximum power point tracking (MPPT) is implemented to identify the maximum power operating point, subsequently regulate the solar panel to operate at that particular operating voltage for maximum power gaining. Based on the impedance match between reflected input impedance with load impedance, the maximum power can be extracted from the PV Array. Hence the simulation results show better performance where it can facilitate the solar panel to produce a more stable and maximum power.

Index Terms—Maximum power point tracking (MPPT), photovoltaic (PV).

I. INTRODUCTION

Innovations in the P.V technology becoming important as worldwide needs for reliable, clean and pollution free growing worldwide, hence research is needed for effective extraction of power from P.V cell or Module. The PV system generation of electricity will play more important role in village electrification or remote areas where electric grid supply not available and in distributed power generation particularly during peak load. The energy produced by PV cell is varying in nature due the environmental conditions such as irradiation and temperature.[1]-[5] The mathematical simulation model of PV cell and compared with existing model and studied different parameters variation such as temperature and irradiation level[6]-[11]. The PV module is strongly influenced by the solar irradiance and cell temperature a very common method used is the perturb and observe algorithms by sensing the PV voltage and Current accordingly modifies duty ratio of the Dc-Dc converter [12]-[13].Recent works reflect the interest of designing of proper controller and extracting maximum power from the module. Other methods that have been used for optimizing and enhancing extracting power from PV module such as Fuzzy logic and neural network method

The rest paper is organized as follows. Section II briefly describes the dc-dc boost converter, Section III Deals

with Modeling of PV array, Section IV deals with the Matlab simulink simulation results of Boost converters and conclusions are stated in section V.

II. DC-DC CONVERTERS

The Dc-Dc converters are used to convert the voltage one level to another level in regulated manner, the output voltage can be either lower or higher or both as compared to input voltage The following Boost converter is analyzed with respect to maximum power tracking (MPPT) to vary the input side reflected impedance in turn varying duty cycle of switching device. It is also called step up converter, the output voltage greater than the input voltage .Figure 1 shows the basic configuration of a boost converter

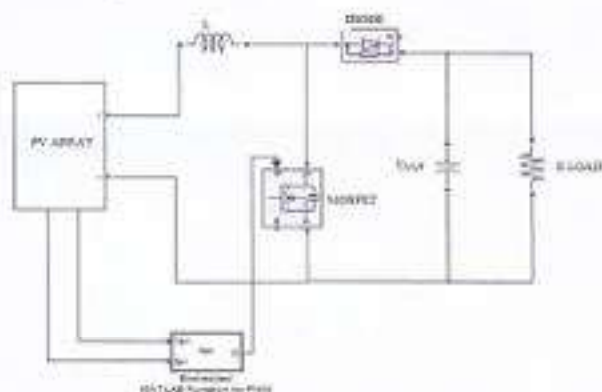


Figure 1.Proposed Boost converter.

$$\text{Maximum Duty cycle, } D = 1 - \frac{V_{in(\min)} \times \eta}{V_{out}} \quad (1)$$

$V_{in(\min)}$ = minimum input voltage

V_{out} = desired output voltage

η = efficiency of the converter, e.g. estimated 85%

$$\text{Inductor Ripple current, } \Delta I_L = \frac{V_{in(\min)} \times D}{f_s \times L} \quad (2)$$

f_s = minimum switching frequency of the converter

L = selected inductor value

Maximum output current of the selected IC:

BLDC MOTOR SPEED CONTROL USING CO-SIMULATION OF MULTISIM AND LABVIEW

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Abstract: Brushless dc motor is finding various applications in the present day scenario. They have improved efficiency, higher speed, better torque speed characteristics and faster dynamic response when compared with the traditional motors. In this paper, a controller is developed based on co-simulation of multi sim and lab view and is presented for low cost brushless dc motor drive with low-resolution hall sensors. The driver circuit is made using a low cost MOSFET gate driver IC in multi sim and the controller is developed in lab view. A hall sensor is usually used to commutate the BLDC motor and the hall sensor output is used as the gate pulse for the six pulse inverter. The effectiveness of the design was verified through co-simulation.

Keywords: BLDC, gate driver circuit, control circuit multi sim, lab view, co-simulation.

I. INTRODUCTION

Brushless dc motor (BLDC) are also known as synchronous motors, in which the rotor is a permanent magnet and the stator is the steel lamination stacked inside the stator slots [1]. In order to control the positioning of the rotor and the speed of the BLDC motor hall effect sensors are used. For obtaining a reliable speed, from the hall sensor signals control for time difference inverse is found. At lower speed the sampling time for speed regulation is still more. The sampling time is dependent to the motor speed and this makes it difficult to design the speed regulator for the model. For obtaining accurate speed control and to reduce any difficulty in designing speed regulator a low resolution encoders that works in low speed is used with the BLDC motor. A simple and easy implementation based on the reduced order disturbance torque at an instantaneous speed was explained by N.J Kim [2]. In [3] a new method was proposed to obtain the rotor speed and position with an out time delay known as dual observer. A low speed model with free enhancement differentiator was proposed for improving the velocity [4] [5]. While considering the BLDC motor commonly used speed recognition method is using the back emf estimation. When the rotor speed is very less this method cannot be used to find the speed and position due to the inverter design and variation in parameters used. This paper presents study of controlling the speed of a brushless dc motor with the hall effect sensor using multisim and labview.

II. WORKING PRINCIPLE OF BLDC MOTOR

Fig.1 shows 3 phase bridge circuit for driving 3 phase BLDC motor. Each commutation sequence will have one of its windings energized to a positive power where the current enter will into the winding, the second winding is negative (current leaves the winding) and the third is in a non-energized condition from where the back emf is sensed.

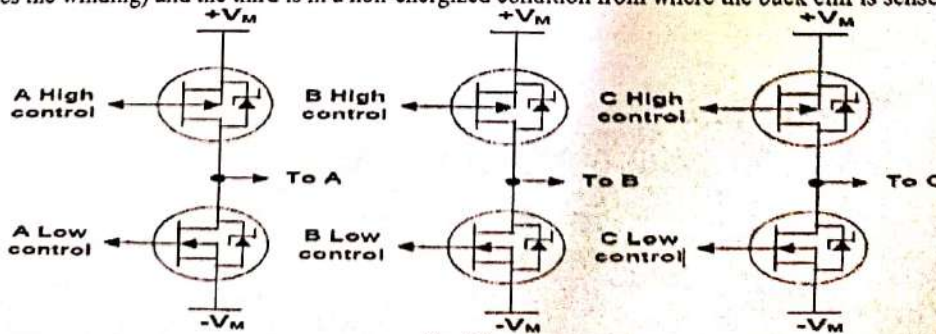


Fig.(1)

OPEN LOOP CONTROL OF A MAGNETICALLY COUPLED BIDIRECTIONAL BATTERY CHARGER

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Abstract: It is needless to say that Power Electronics revolutionized the converter topology which has extended its tentacles. The application areas include battery charger, uninterrupted power supplies, fuel-cell hybrid power systems, photo voltaic hybrid power systems. The proposed circuit acts as a current source i.e., constant current (CC) mode with a controlled output current and as a voltage source i.e., constant voltage (CV) mode with a controlled output voltage. The proposed converter is capable of providing power flow in either direction while maintaining the polarities of the voltage on either side unchanged. The presented solution uses a magnetically coupled bidirectional converter and a damping network. The whole process is simulated in MATLAB/SIMULINK and their corresponding output waveforms have been generated at each stage.

Keywords: Battery charger, constant current (CC), constant voltage (CV), magnetically coupled.

1. INTRODUCTION

The DEVELOPMENT of portable electrical products has rapidly proliferated in recent years. A secondary battery is the significant and necessary power source for these devices and consequently high-quality battery charge strategy is desired.

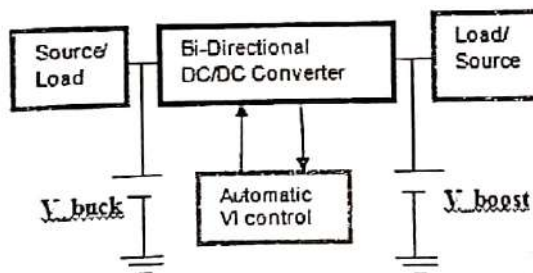


Fig. 1: Basic block diagram for optimal bidirectional battery charging.

Bi-directional battery chargers are used to transfer the power between two DC-DC converters. The basic block diagram of an optimal bidirectional battery charging system is shown in Fig.1. There is a need of a bi-directional battery charger that can charge any battery of given voltage with its optimum charging current requirement. The battery charging techniques include constant current (CC) and constant voltage (CV) charging

[1]. The CC method using constant currents for battery charging and the charging currents for the series connected batteries are equal. During CV charging, the initial stage of charging, the possible large charging currents need to be limited to protect devices. When the battery voltage reaches the default value, charging voltage is hold and charging current decreases with time.

The boost converter is widely used for many different applications. When the power transferred from battery to high voltage side it behaves as a step up converter. To avoid inrush current the output voltage is always higher than the input supply voltage. In step up mode of operation voltage increases and current decreases. In buck mode of operation, the power transferred from battery to low voltage side it behaves as step down converter. In buck mode the input supply voltage is always higher than output voltage and since energy storage is placed on low voltage side so voltage get reduces and current increases [2].

The paper is organized as follows. The section 2 of this paper describes the methods used in the proposed technique. Section 3 explains the optimum design of the network; section 4 provides the verification of the proposed theory with MATLAB/SIMULINK simulation and comparison is made with the magnetically coupled inductor and without magnetically coupled inductor. Finally a conclusion and the future scope are drawn in section 5.

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COMPARITIVE STUDY OF BLDC MOTOR SPEED CONTROL USING CO- SIMULATION OF MULTISIM & LABVIEW AND MATLAB

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ABSTRACT

Brushless DC (BLDC) motors are widely used in aerospace, space vehicles, electric vehicles, robotics and other motion control applications. They are replacing brushed DC motor and induction motors because of their advantages like better speed-torque characteristics, high dynamic response, high efficiency, long operating life, noiseless operation, and high speed range. In this paper an electronic speed controller circuit is presented with MOSFET as switching element driven with low cost MOSFET/IGBT gate driver ICs. The gate driver IC eliminates the use of multiple power supplies in the circuit. The circuit explains the speed control method by sensing the back emf. In this paper, simulation is done by co-simulation of multisim and labview and is presented for low cost brushless dc motor drive with low-resolution hall sensors. The driver circuit is made using a low cost MOSFET gate driver IC in multisim and the controller is developed in labview. A hall sensor is usually used to commutate the BLDC motor and the hall sensor output is used as the gate pulse for the six pulse inverter. The effectiveness of the design was verified through co-simulation MATLAB

Keywords: BLDC, gate driver circuit, control circuit multisim, labview, co-simulation, MATLAB

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Simulation of MPPT using Fuzzy Logic Controller for AC Drive

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Abstract: The need for renewable energy sources is increasing due to increase in world's energy demand. Solar energy is one of the widely used renewable energy source due to efficiency, size, maintainability. In this work dc power from the solar panel is boosted using a boost converter and then it is given to inverter which gives AC Power which runs an induction motor. To get the maximum power available a MPPT controller is used to control the Boost converter. There are different types of MPPT algorithms in which artificial intelligence techniques are popular. Artificial neural networks and fuzzy logic are two different types of artificial intelligence techniques used to design MPPT controller for PV system. Depending on solar radiation and temperature MPPT controller gives optimum duty cycle to the switch of the boost converter. In this work fuzzy logic technique is used to control the MPPT to give optimized duty cycle.

Keywords: MPPT, PV, ANN, FL.

I. INTRODUCTION

The large usage of fossil fuel such as coal, gas and oil results in the green -house effect and environmental pollution. Meanwhile increase in the global energy demand decrease in conventional energy resources leads to the increase in the fossil fuel costs[1]. These are the limitations for the human development. So there is a need for renewable energy sources:

Among several sources of renewable energy sources, solar energy is the primary one. On an average earth receives $1.2 \times 10^{17} \text{W}$ of solar power. It has several advantages like no fuel cost, requires little maintenance, non -polluting etc [2].

Solar power system finds extensive application in remote areas where access to the grid supply is not possible[3]. Solar pump operated with AC drive uses an inverter with ac motor. Induction motor offer better choice in terms of size, ruggedness, efficiency and maintainability. The DC power from solar array is boosted using a boost converter and fed to an inverter which gives ac output. Output of the inverter drives the motor.

PV generation systems generally have two major problems. One is low conversion efficiency and electrical power generated by the solar array changes under varying weather conditions [4]. Therefore photovoltaic power system usually requires maximum power point tracking (MPPT) controller, which is an electronic system which operates the Photovoltaic (PV) modules, such that it allows all the modules to produce maximum power. There are different types of MPPT algorithms like Perturbation and Observation (P&O) Method, incremental conductance methods come under the group of traditional techniques. There are other techniques called as Artificial intelligence (AI) techniques are alternate approach for conventional physical modelling techniques as they do not require the knowledge of internal system parameters, involve less computational effort and offer a compact solution for

multivariable problems. They have been used to solve complicated practical problems in various areas. These techniques are becoming more popular in PV systems which exhibits non-linear features. Artificial neural networks (ANNs) and fuzzy logic (FL) are two different types of artificial intelligence techniques, are used to design the MPPT controller for PV system [3]. In this paper Fuzzy Logic technique is used for the design of MPPT controller.

II. PV ARRAY

A photovoltaic cell is a device which converts incoming sunlight into electric current by means of photoelectric effect. Basically PV cell is a p-n junction semiconductor diode. An ideal solar cell is can be modelled as a current source in parallel with a diode. But there is no ideal PV cell[3].

The equivalent circuit of a non-ideal PV cell is as shown in the Fig. 1 which consists of a current source, a diode, a series resistance and shunt resistance [5][6].

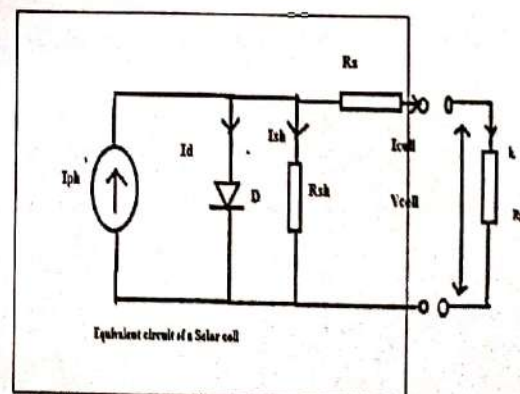


Fig. 1: Equivalent electrical circuit of a PV cell



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Field Oriented Control of Induction Motor-A Literature Review

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Abstract: Field oriented control has achieved new heights in controlling Induction Motor under steady state and transient conditions. This paper presents a brief survey of development of field oriented control in last two decades. The survey indicates that the key for achieving controllability of induction motor as good as that of DC motor is due to the decoupling of current responsible for production of torque and no load flux. In further advancement, artificial intelligent techniques are adopted for developing adaptive controllers.

Keyword-Field Oriented control, Fuzzy logic Controller, Artificial intelligent techniques

I. INTRODUCTION

Performance of speed controller of induction motor can be substantially improved by controlling the flux and current producing the torque independently. Field oriented control can be classified as direct and indirect method of speed control. Rotor resistance plays an important role in determining orientation of field in case of indirect method. In case of direct field oriented control method, knowledge of magnitude and orientation of rotor flux is required. Due to non availability of rotor current in case squirrel cage induction motor rotor flux must be estimated through observer. Main problem associated with vector control is poor performance of controller under transient conditions like, starting, stopping, sudden variation in load etc. This is due to variation of motor parameters like rotor resistance. The following sections provides a review of literature on advancements in the field oriented control of Induction Motor Dives [1-2]

II. A PARDIGM SHIFT FROM DC DRIVES TO AC DRIVES

A DC motors have excellent speed controllability because of which they were used in most of the applications. This is due to the fact that two independent circuits are present for production of flux and torque. The main drawback of these drives is mechanical commutator which needs regular maintenance. Induction motor is very robust and requires very less maintenance. It became suitable for high performance applications due to advancement in the theory called vector control theory. According to this flux and torque producing current components are controlled separately. Research in the

fields like digital signal processing, power electronics, simulation tools, field programmable gate array (FPGA), artificial neural network, fuzzy logic had major role in emergence of high performance induction motor. [3-4]

III. OBSERVERS FOR FIELD ORIENTED CONTROL OF INDUCTION MOTOR DRIVES

Observers for field oriented control are classified as full order and reduced order observers. Reduced order observers are easier to implement compared to full order observers. Full order observer parameters depend on speed as well as on the slip of the motor. Estimation of observers will go wrong if errors are present in observer parameters. This is due to variation in rotor resistance due to variation in temperature. Closed loop observers with faster response are less sensitive to parameter variation. [5]

IV. STATOR RESISTANCE AND ROTOR RESISTANCE TUNING METHODS

Depending on the method used for determining flux vector orientation field oriented control is categorized as direct and indirect control methods. In direct control of field orientation flux vector is determined using stator terminal quantities. In case of indirect scheme it is achieved using the value of machine slip frequency.

Field oriented control of either type requires machine parameters. Indirect control scheme require induction machine inductance value and time constant of rotor. Direct field orientation scheme requires stator resistance value. Determination of these parameters is difficult and the values of these parameters are changing during the operation. Depending on type of method employed variation in parameters are going to influence the controllability of the drive negatively.

In stator flux oriented direct control method stator resistance value is dominant in low speed region. Effect of variation in its value at high speed range is negligible. A closed loop stator resistance estimation scheme developed to reduce the effect of change in stator resistance at low speeds.

Indirect method of field oriented control mainly depends on estimation of motor slip, which is mainly influenced by rotor time constant. When open loop current model observer is used,



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Smart Automated Wheelchair

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Abstract— Over the years, technology has improved the way how healthcare providers treat and take care of the patients. The Development in medical field is a necessity of human needs. It is important to consider a person with disability. In order to improve the life of disabled person, scientists are doing lot of researches and also giving their best to invent automated tools. This project aims at providing maximum satisfaction with introducing special features along with safety of the disabled person. Normally the wheelchair is operated manually or with the help of joystick. But while considering a person with disability in both hands the person would take assistance from another person. In order to overcome this problem we have a voice controlled wheelchair. In addition to that we are providing with the obstacle detection, steep (gradient) detection and GSM to communicate with family member when they come up with some problems when no one is near them. The smart automated wheelchair designed involves electronic circuits such as sensor, relay, control circuits, microcontroller, IC, signal transmitter, signal receiver, GSM module. To avoid the collision and also to detect gradient the ultrasonic sensor is used. The wheelchair stops when there is a gradient. The GSM module is used to send message to the respective family member whenever the person is in danger.

Keywords— Arduino board, Bluetooth module, GSM module, Wheelchair, ULN2003.

I. INTRODUCTION

Wheelchair is used when walking is difficult or impossible due to illness, injury or disability. Smart Wheelchair is automatically controlled device designed to have self-mobility with the help of user command. There are wide varieties of wheel chair differing by propulsion method,

Mechanism of control and technology used. These wheelchairs have several problems, such as the need of muscular strength, the helper has to support and the user cannot control joystick because of the disability.

The Smart automated wheelchair is operated by voice commands and hence muscular strength and joystick is not necessary. The additional feature of this wheelchair is obstacle detection and steep (gradient) detection, i.e. it can detect any obstacles or steep and stop the wheelchair accordingly. The GSM module of SIM900 for communicating the family member whenever person needs a help. The motor is controlled using the relay driven by IC ULN2003. The wheelchair is programmed using Arduino Uno and mega.

II. RELATED WORK

There are wide varieties of wheelchair differing by propulsion method, mechanism of control and technology used. We have also seen that there are many automated designed wheelchairs which works using the DC power supply and controlled by joystick, remote controller or manually, that can be operated either themselves or by any others assistance. Developed system use both software as well as hardware. The hardware architecture consists of an embedded system that is based on Arduino board, a Bluetooth Module, Motor Driver and an Android phone. The Bluetooth Module provides the communication media between the user through the android phone and the system by means of voice command given to the android phone.

Wheelchair is controlled using the joystick. Here joystick is used to move the wheel chair as per required. Most electric wheelchairs are manually steered with a joystick, although there are several other possibilities for the

Betel Nut Sorter

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Abstract—This project deals with the idea of betel nut sorting by making use of a simple device like a color sensor. The method employed for the sorting of the betel nuts is a cost effective method and does not require manual labor. The color sensor is a device which works with lots of precision and it is simple to use.

Keywords—Colour Sensor, LED, Arduino, Motor

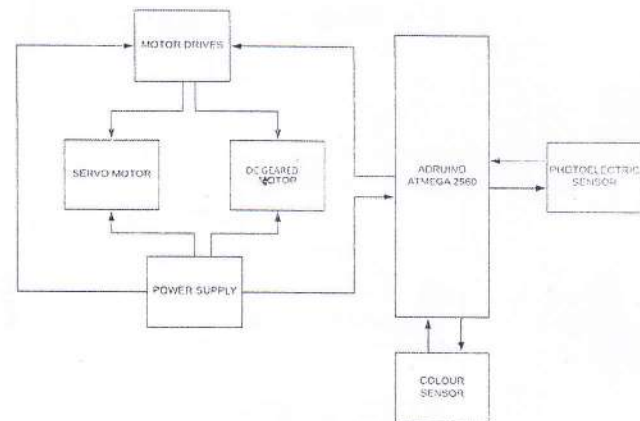
I. INTRODUCTION

The areca nut is the fruit of the areca palm, which grows in much of the Southeast, tropical Pacific, and South Asia, and parts of east Africa. This fruit is commonly referred to as betel nut. The areca nut is not a true nut, but rather a fruit categorized as a berry. It is commercially available in dried, cured, and fresh forms. When the husk of the fresh fruit is green, the nut inside is soft enough to be cut with a knife. The husk becomes yellow or orange in a ripe fruit, and the fruit inside hardens to a wood-like consistency as it dries.

Areca nut production in India is the largest in the world, accounting for 49.74 % of its world output and is exported to many countries. India is one of the major producers of betel nuts in the world and it is also one of the largest consumers of betel nut worldwide. As a result, betel palms are planted extensively in India. Betel nut processing is a tedious process and one of the most labor intensive step in the processing of betel nuts is the sorting process. Manual sorting of betel nuts requires the help of laborers and is a very time consuming process. Due to the difficulty in availability of labor and also the agenda of finishing the sorting process in minimal time, it makes it very cumbersome for the betel nut plantation owners to go ahead with the idea of sorting manually. Betel nut processing machines which were fabricated earlier also don't have the merit of proper sorting. A robust and reliable betel nut sorter will be a boon to the betel nut plantation owners and

all the difficulties faced during the manual sorting of betel nuts can be superseded. The time involved in sorting of the betel nuts will be greatly reduced and proper sorting excluding all errors will be possible.

II. BLOCK DIAGRAM



The sorting is done by making use of a color sensor. The betel nuts are sorted based on their color and the readings of the primary color values obtained for each variety of betel nut is different which is a base for sorting them based on their commercial grade. The work done in this area has been primarily only the sorting of the betel nuts into two commercially important grades namely the burgundy brown betel nut which is commercially the grade one variety and the black variety which is of least commercial importance when compared to the burgundy brown variety. Betel nuts can be sorted into 3 varieties and not just two and this is what the methodology given in this paper aims to achieve. This paper traces the efforts made to sort the betel nuts into three grades by utilizing a color sensor.

IMPLEMENTATION OF DSP BASED SINUSOIDAL PULSE WIDTH MODULATION FOR THREE PHASE INVERTER

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Abstract: This paper presents the implementation of sinusoidal pulse width modulation for a three phase Bridge inverter. Basically three sinusoidal reference signals which are phase shifted by 120 degree apart from each other and compliment of these three sinusoidal signals are compared with the carrier signal to generate six different PWM signals for six switches of three phase inverter. LC filter is employed to reduce higher order harmonics in the three phase inverter output voltage. Closed loop operation is carried out. Hardware is implemented for open loop system where the SPWM algorithm is implemented in DSPIC30F2010. The efficiency of the inverter is high and offers less harmonic distortion. The proposed technique is simulated using MATLAB-Simulink model and THD is measured

Keywords: Sinusoidal Pulse Width Modulation, Total Harmonic Distortion, DSPIC30F2010

1. INTRODUCTION

Sinusoidal pulse width modulation technique is applied to three phase inverter to obtain necessary output sinusoidal voltage without much harmonics. This is possible if the sampling frequency is much higher than the fundamental output frequency of the inverter. This method is characterized by constant amplitude pulses with various duty cycles in each period [1]. Most popular application of sinusoidal pulse width modulation is the motor control and inverters.

This paper presents the implementation of sinusoidal pulse width modulation for three phase inverter to obtain output voltage with reduced harmonics. Output of the inverter is filtered using a second order passive filter in order to obtain a sine wave output [2]. Total harmonic distortion of the output voltage of the inverter with filter and without filter are measured. THD of the output voltage of inverter with filter is less compared to the THD of the output voltage of inverter without filter. Closed loop operation is carried out using PI controller to obtain constant inverter output.

2. THREE PHASE SPWM INVERTER

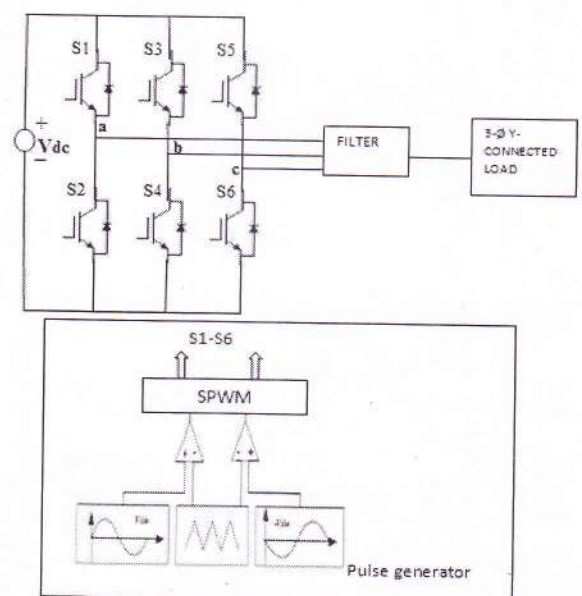


Fig. 1: Block Diagram

Basic block diagram of SPWM implemented three phase inverter is shown in figure 1. It can be divided into two parts. Power circuit and control circuit. Power circuit includes three phase inverter, DC supply, star connected load and LC filter. Control part includes PI controller and a sensing circuit. Power circuit includes semiconductor devices which have non linear characteristics. This non linearity will generate dominant harmonics in the inverter output. Hence LC filter is employed to filter major harmonics from the inverter output. Trigger pulses for the inverter is generated using sinusoidal pulse width modulation technique.

3. SPWM GENERATION

Six PWM pulses are generated for six switches of three phase inverter. The pulses for lower switches are compliment to that of upper switches of respective legs. Three sinusoidal reference signals which are phase shifted by 120 degree and these signals are compared with a triangular carrier wave [1]-[2]. Thus three pulses with constant amplitude and with different duty cycle for each period is obtained. These three pulses are used to trigger the upper switches of the bridge inverter. Then the compliment of these three pulses is obtained and is used to trigger the three lower switches of the bridge inverter. The pulse generating circuit is as shown in Figure. 2. Figure. 3 shows the comparison of triangular and three phase sine wave and the generated PWM for upper and lower switch of first leg.

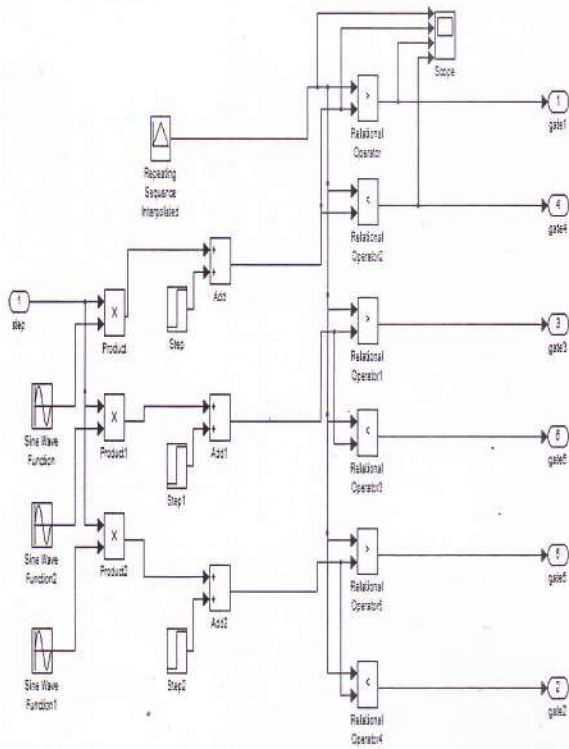


Fig. 2: PWM pulse generating circuit

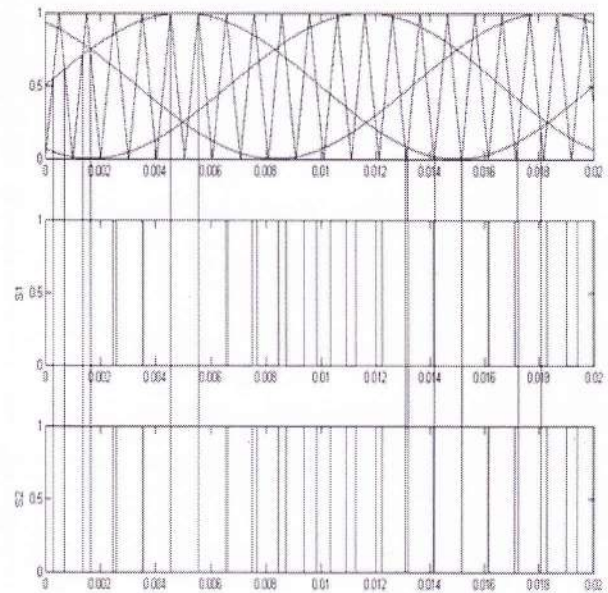


Fig. 3: sine and triangular wave Comparison and PWM waveforms.

4. SIMULATION RESULT AND DISCUSSION

In an open loop operation, three phase inverter output is given to star connected R load without any output filter circuit. Since there is no output filter, because of non linear characteristics of inverter switches, output voltage and current waveforms of inverter will have dominant harmonics. Open loop simulation circuit is as shown in figure 4. With the input DC voltage of 400V, the output voltage and current waveforms of inverter is as shown in figure. 5.

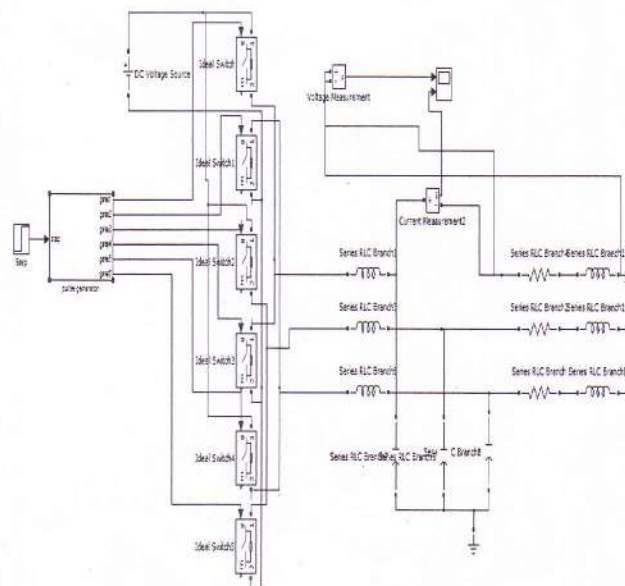


Fig.4: Open loop simulation circuit

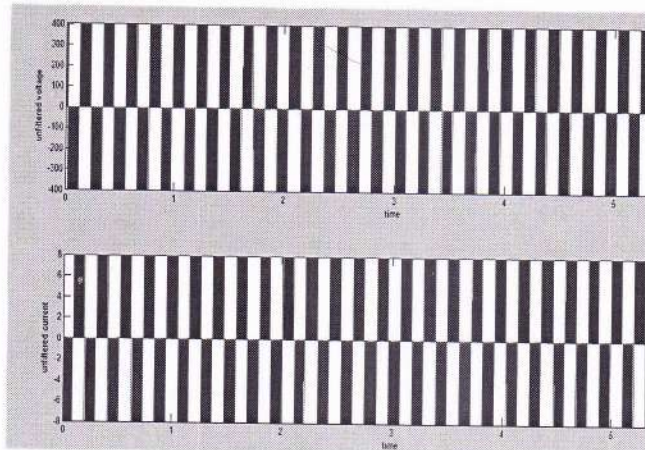


Fig. 5: output voltage and current without filter

In order to reduce the dominant harmonics in the inverter output, LC filter is connected across the inverter output which in turn connected to RL load. Inductor and capacitor helps in removal of harmonic frequencies. Inductance and capacitance value for LC filter is designed such that it should match the chosen corner frequency. Inductor value can be reduced if the switching frequency is increased. A filter with low inductance and high capacitance is well suitable for the proposed circuit [3]. In this paper the switching frequency is selected as 1 kHz and the corner frequency for the filter is selected as 100Hz. The required fundamental output frequency is 50 Hz. For the input of 400V DC, the circuit is designed to obtain the output phase voltage of 200V rms and output current of 5Amps. The respective waveforms are as shown in figure. 6.

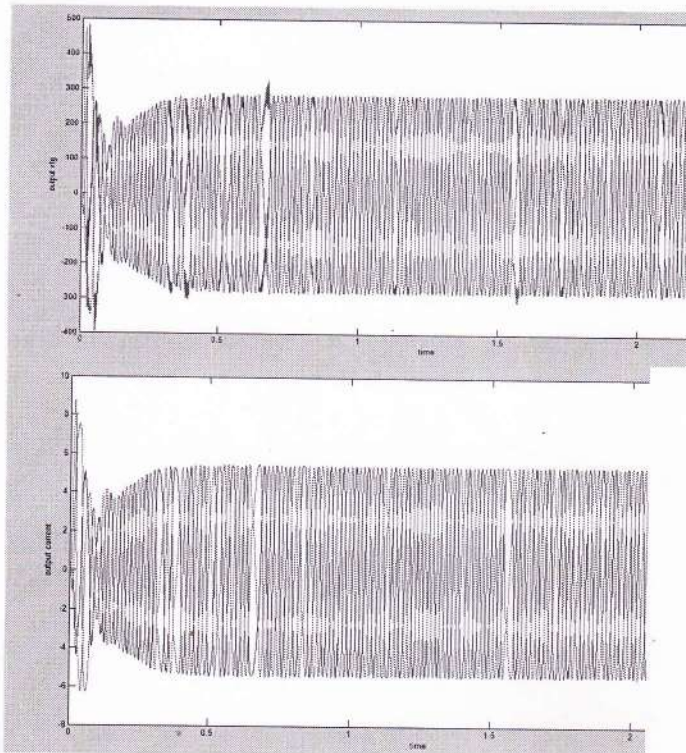


Fig. 6: 3-Ø output voltage and current with filter

THD and harmonic contents of output voltage is measured for the inverter with filter and without filter in the open loop operation. THD of the inverter without filter is 54.10% where as THD of inverter with filter is 0.22%. The harmonic contents which are present in the output voltage of the inverter with filter and without filter are as shown in figure 7 and figure 8. It is observed that the higher harmonic content in the output voltage of the inverter with filter is reduced compared to output voltage of the inverter without filter.

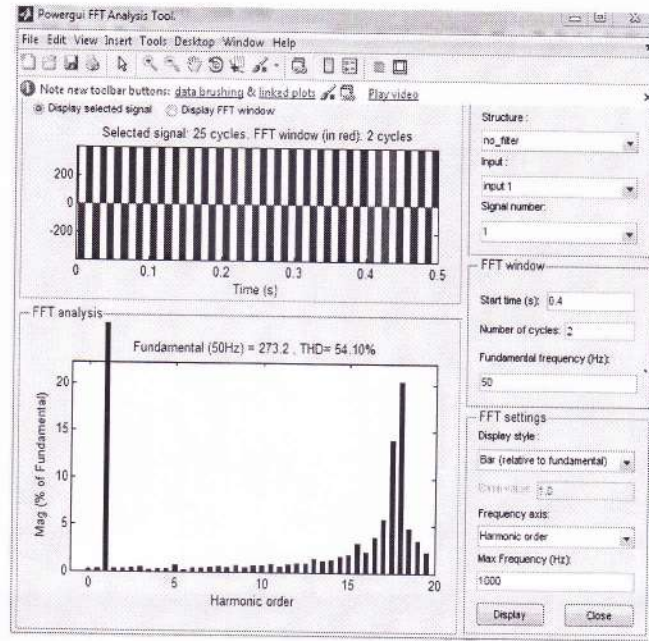


Fig.7: FFT analysis of output voltage of inverter without filter

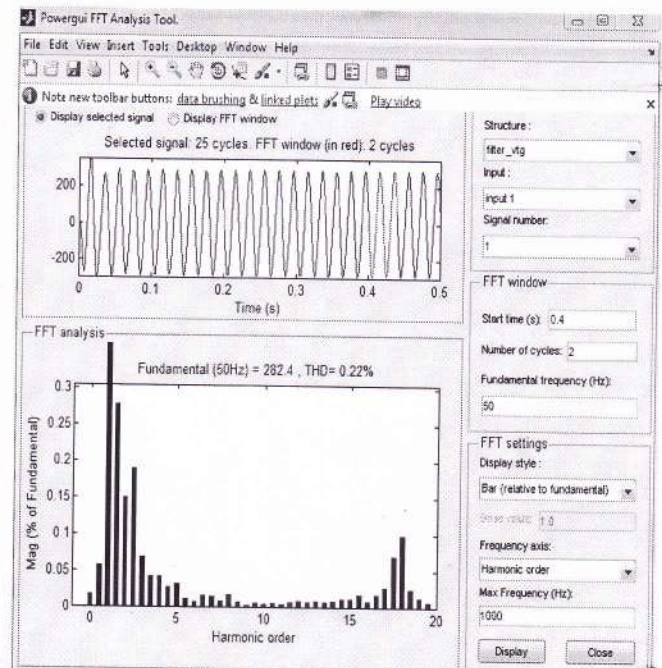


Fig.8: FFT analysis of output voltage of inverter with filter

In an open loop operation, output voltage varies whenever there is variation in the input voltage. This may affect the load characteristics. Hence closed loop operation of three phase SPWM inverter is carried out using PI controller. The closed loop simulation circuit is as shown in figure. 9.

In the closed loop operation, the output voltage is fed back and compared with the reference voltage, obtained error signal is fed to the controller. PI Controller modifies the duty cycle of PWM to obtain the desired output. Because of the controller action, the output voltage remains constant whenever there is a variation in the input voltage and hence the load characteristics remain unaffected [4]. Since input reference voltage is DC and the output voltage which has to be compared with reference voltage is AC, comparison is not possible. So for this reason, the output voltage has to be converted to DC using rectification process. A full bridge rectifier circuit is used for rectifying the output voltage. Since the rectified output is very much higher than the reference voltage, the rectified output voltage has to be reduced so as to match the reference voltage. This is done using a voltage divider circuit. A capacitor filter is employed in order to obtain constant DC from a pulsating rectified output. Then the rectified and filtered output signal is compared with reference signal and error signal is given to PI controller. The simulation for rectifier and voltage divider circuit is as shown in figure 10 and filtered rectifier output is shown in figure 11. The values of K_p and K_i of the PI controller are designed such that the error signal should be zero and the load voltage should remain constant with variation in the input voltage [4]. Design parameters for entire circuit are given in table 1.

Figure.12 shows the reference voltage, rectified feedback voltage and the error signal.

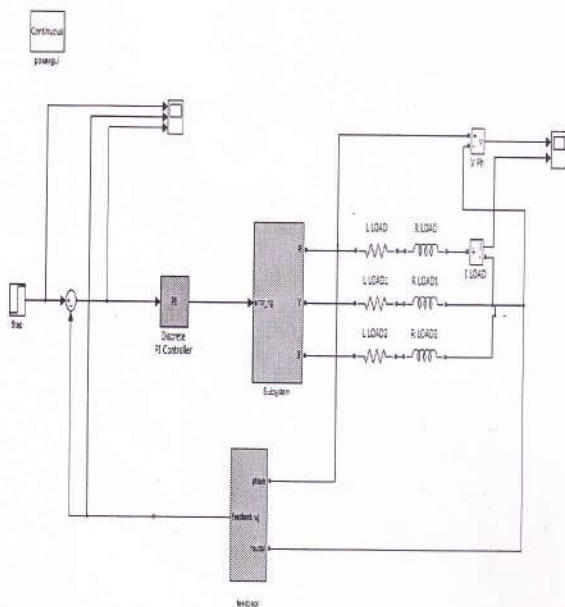


Fig. 9: closed loop simulation circuit

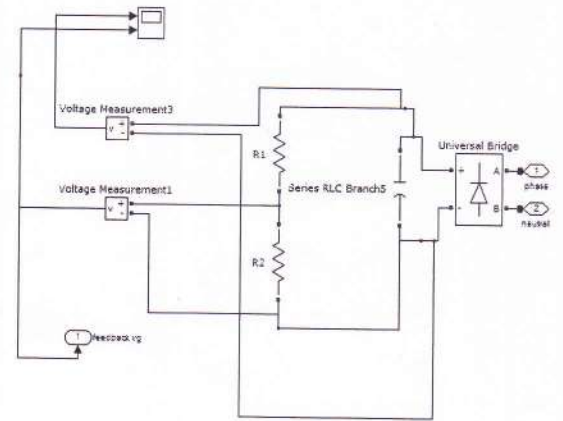


Fig. 10: rectifier and voltage divider circuit for rectifying and reducing the output voltage

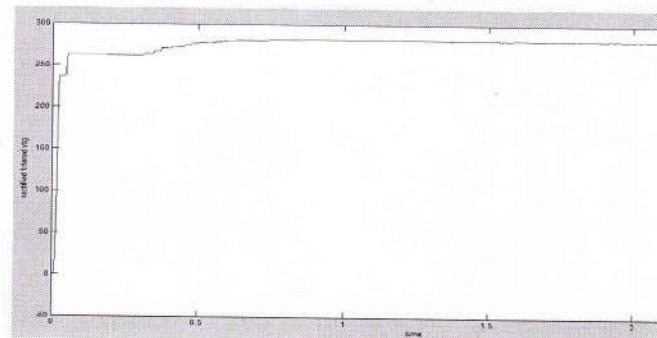


Fig. 11: filtered rectifier output

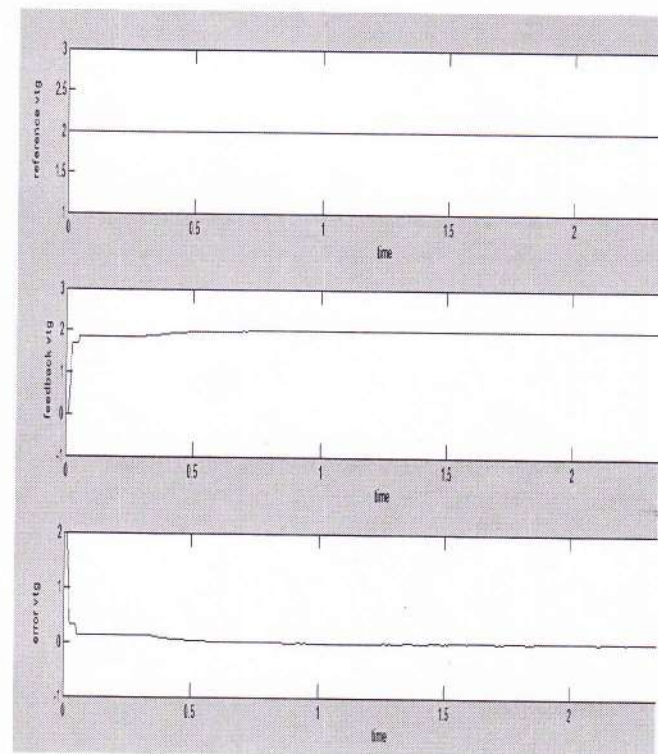


Fig. 12: Reference DC voltage, rectified feedback voltage and error voltage waveforms obtained during closed loop simulation

Table 1: Design Parameters

parameters	Values
Input_DC_voltage	400V
Required output voltage	200V r m s
Fundamental frequency	50Hz
Switching frequency	1kHz
filter inductor L	30mH
Filter Capacitor C	150uF
Kp, Ki	2, 10
Capacitor filter	200uF
Voltage divider R1	198.58K Ω
Voltage divider R2	1.41 K Ω

5. HARDWARE IMPLEMENTATION

Open loop system of the proposed technique is implemented in hardware with no load condition. A DSPIC30F2010 is used to implement the SPWM algorithm. To generate a sine wave, 64 points sine table is generated. The switching frequency is set as 1.5 kHz. Different duty cycles are set to all three legs of the bridge inverter. Figure 13 shows the SPWM pulses generated for leg 1 where the two pulses are compliment to each other. The dead time between the switching of upper and lower switch is set as 21usec. Dead time of 20usec is achieved as shown in figure 14. The unfiltered inverter output voltage for phase a and phase b is as shown in figure 15 where the two waveforms are phase shifted by 120^o from each other. The experimental setup is as shown is figure 16.

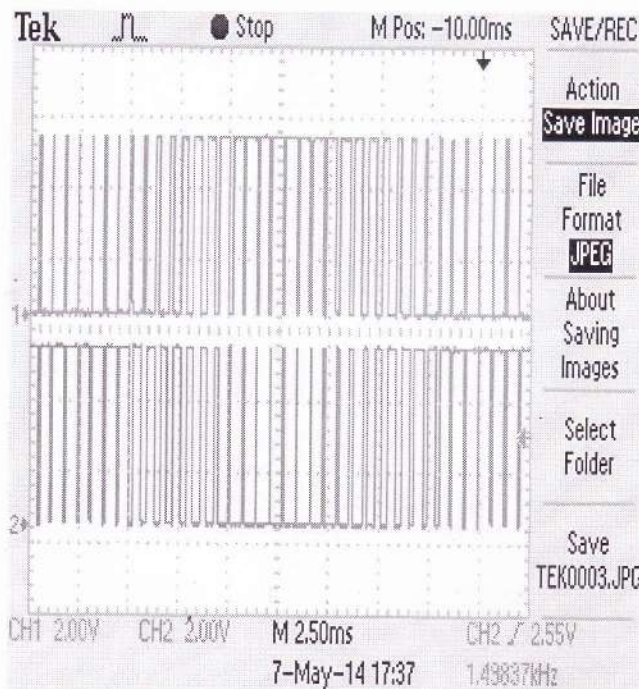


Fig. 13: generated SPWM pulses for S1 and S2 switches of bridge inverter.

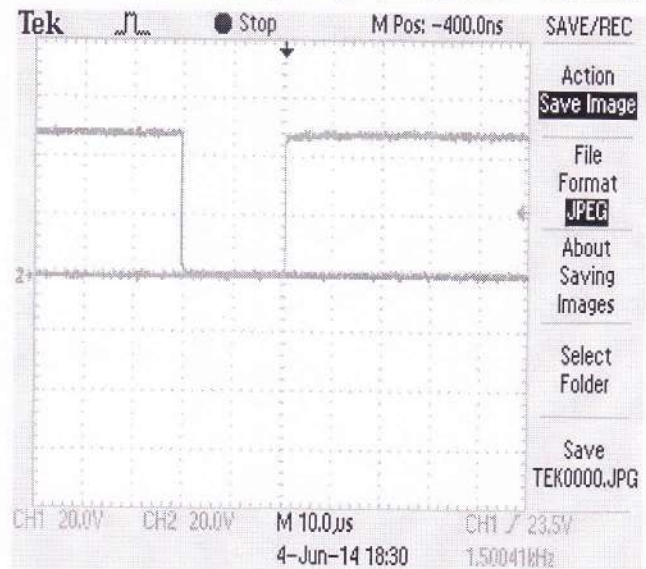


Fig. 14: dead time between the switching of S1 and S2 switches

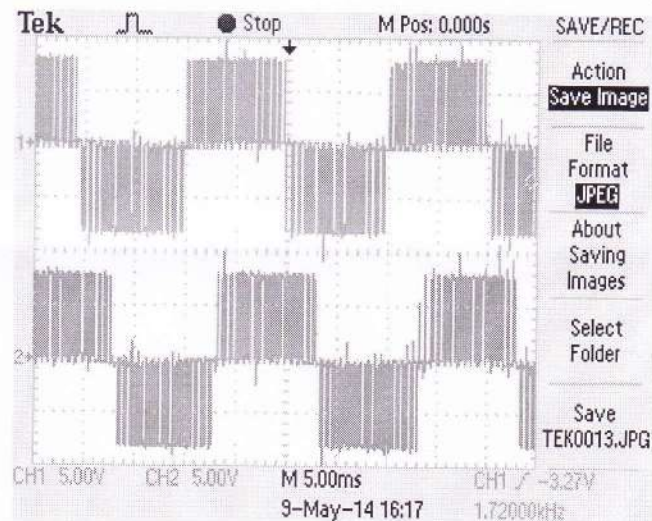


Fig. 15: unfiltered output voltage of the inverter (phase a, phase b which are phase shifted by 120^o)

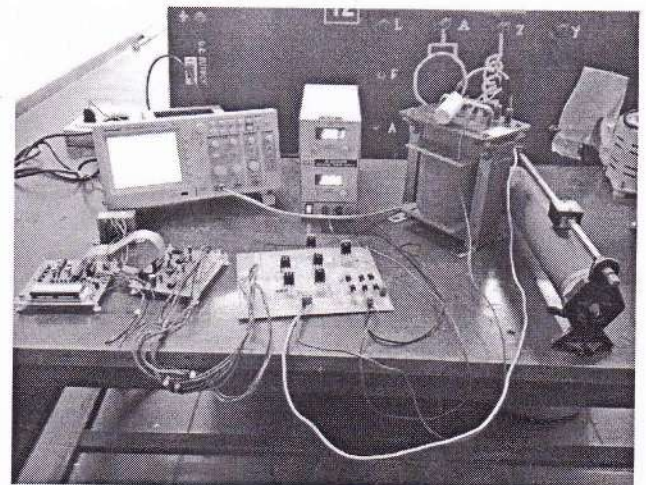


Fig. 16: experimental setup

6. CONCLUSION

This paper implements the SPWM for three phase inverter. Six different pulses are generated to trigger the switches of bridge inverter. Second order LC filter is used across inverter output to reduce the harmonic distortion in the inverter output voltage. Closed loop simulation is carried out to obtain constant inverter output. THD is measured and is observed to be 0.22% for inverter with filter which is less than that of the inverter without filter and also higher order harmonics are reduced. Proposed system is analyzed using MATLAB simulations. Open loop system is implemented in hardware using DSPIC30F2010. SPWM pulses are generated and unfiltered ac output voltage is obtained.

7. REFERENCES

1. M. F. N. Tajuddin, N. H. Ghazali, I. Daut and B. Ismail "Implementation of DSP Based SPWM for single phase inverter" SPPEADAM 2010 International Symposium on Power Electronics.
2. Mohan, Undeland, Riobbins "Power Electronics", converters, application and design.
3. Bunyamin Tamyurek, Member. IEEE "A high performance SPWM controller for three phase UPS systems operating under highly nonlinear loads" IEEE transactions on power electronics, vol. 28, no. 8, august 2013.
4. Katsuhiko Ogata "Discrete time control systems".



Comparison of two Different Approaches for Harmonic Analysis of Single Phase Inverter

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Abstract: In this paper we present, harmonic analysis of single phase inverter based on unipolar pwm and bipolar pwm techniques. Simulation results of both the methods are also highlighted. In order to find the Total Harmonic Distortion (THD), FFT is used using mat lab/simulation software. It is found that performance of unipolar switching technique is better than bipolar switching technique in comparison of THD. It is observed that minimum value of THD of unipolar switching technique is 5.28 % and Bipolar switching technique is 11.03 % in case of amplitude modulation. Also in the case of frequency modulation we get 5.52% and 7.72% respectively.

Keywords: Total Harmonic Distortion; Modulation Index; Pulse width modulation.

1. INTRODUCTION

In recent years many research are ongoing for improving efficiency of inverter mainly by different switching techniques. Pulse width modulation technique controls, on-off time period of switches to obtain desired AC output and also helps to control the harmonics in AC output voltage and current of the inverter. In Pulse width modulation technique, the output voltage and frequency of the inverter can be controlled easily by varying the conduction angle of the inverter switches. By Pulse width modulation technique one can achieve variable frequency and voltage or constant frequency and voltage output from the inverter. Some applications require variable frequency for example, speed control of motor applications requires variable frequency and electrical hammer application requires constant frequency and so on.

Switching techniques such as unipolar and bipolar were used in article [1], for analyzing the harmonics in the inverter circuit with filter. Article [2] explains how inverter can be interface with photovoltaic panels to ac network, and also paper discusses how current harmonics in inverter can be eliminated by unipolar and bipolar switching techniques. After simulation result paper concluded that for low value of switching frequency, bipolar switching techniques provide less current distraction but it is not suitable for high switching frequency. For high switching frequency, article preferred unipolar switching technique because of less power loss and less harmonics.

Authors [3] used unipolar pwm switching technique for the analysis of single phase and three phase motor output voltage and

flux(current) distortion factors. By absorbing results, paper concluded that unipolar pwm technique is excellent for single phase motor control. For three phase motor, authors selected three symmetrical carrier wave and obtained less harmonics in output voltage and current. Modified unipolar PWM inverter is reported in [4], to control the magnitude and frequency for unsymmetrical two phase motor. The pwm technique was simulated in matlab and magnitude control of voltage and less harmonics value have been reported.

A pwm current source inverter proposed in [5] shows that, properly selected switching functions can minimize input and output filtering requirements. Selection of the best pwm technique for most applications is accompanied by uncertainty and may lead to poor results. [6]. A scheme is proposed in [7], where both switching pattern of the output and inverter switching frequency are predefined.

Control technique based on dead beat control theory is discussed in [8] using only a voltage sensor and advantages and disadvantages of five different pwm schemes are highlighted in [9]. A comprehensive analysis of VSI with respect to phase and amplitude has been presented in [10].

In the proposed method, unipolar and bipolar PWM techniques are used to analyze the output of single phase H-bridge inverter. FFT analyses are carried out and % THD is calculated for both unipolar and bipolar pwm techniques, with and without filter using MAT LAB – Simulink software. Hardware implementation is done for unipolar technique since which results in less harmonics.



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HARMONIC REDUCTION ANALYSIS OF THREE PHASE INVERTER USING PWM TECHNIQUES

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ABSTRACT

In recent days power electronic engineers and power consumers are more focused on power quality i.e. reduction of harmonics from current and voltage due to advanced development in solid- state power electronic devices and microcontroller through which PWM's are generated. This paper focuses on implementation of two Pulse Width Modulation techniques for the harmonic reduction in three phase inverter. There are many Pulse Width Modulation techniques available in the literature, this paper deals with Sinusoidal Pulse Width Modulation and Trapezoidal Pulse Width Modulation techniques with and without filter. Here the Total Harmonic Distortion of odd multiple of fundamental frequency is been carried out. This analysis of SPWM and trapezoidal PWM is done by MATLAB/SIMULINK software.

Keywords: Sinusoidal Pulse Width Modulation(SPWM) Trapezoidal Pulse Width Modulation(TPWM), Harmonics, Three Phase Inverter, Total Harmonic Distortion(THD).

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Performance Analysis of Single Phase Inverter-Based on Unipolar PWM Technique

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Abstract: Performance of a single phase unipolar PWM inverter is compared based on circuit configurations. Configuration 1 is a soft switching PWM inverter and Configuration 2 is a hard switching PWM inverter. A part of main switches are connected to high frequency arm and the remaining switches to low frequency arm. All main switches of high frequency arm operate at zero voltage switching (ZVS) turn on and all the main switches of low frequency arm operate at 50Hz to reduce switching losses. The main purpose of using Unipolar PWM inverter is to reduce output voltage harmonics.

Keywords: Soft-switching, Unipolar Pulse width Modulation (PWM) inverter, Zero Voltage Switching (ZVS), Electromagnetic Interference (EMI)

I. INTRODUCTION

As the demands for high-quality power sources increases, a pulse-width modulated (PWM) inverter has been used as a key element for a high performance power conversion system such as uninterruptible power supplies (UPS), medical equipment and communication systems [2]. The DC to AC converters based on PWM technology is superior when compared to other inverters designed using conventional technologies.

PWM or Pulse width Modulation is necessary to maintain the output voltage of the inverter at the rated voltage irrespective of the output load. In a conventional inverter the output voltage changes as the changes in the load occur. To nullify the effect caused by the changing loads, the PWM inverter is used to correct the output voltage according to the value of the load connected at the output. This can be achieved by changing the width of the switching frequency. The AC voltage at the output depends on the width of the switching pulse.

PWM inverters require high-speed switching devices to achieve high performance in term of dynamic response, size, and weight. This results in switching stresses on the power devices, switching loss, and generation of electromagnetic interference (EMI). To overcome these

problems soft switching techniques have been introduced [3]-[6].

In the proposed inverter all main switches of high-frequency arm operate at zero-voltage-switching (ZVS) turn-on and all the main switches of low frequency arm operate at 50Hz to reduce switching losses. The main purpose of using Unipolar PWM scheme is to reduce the output voltage Harmonics. The Simulink model of proposed inverter is simulated in Matlab.

II. PROPOSED INVERTER

A. System Configuration

The block diagram of proposed inverter is shown in Figure 1.

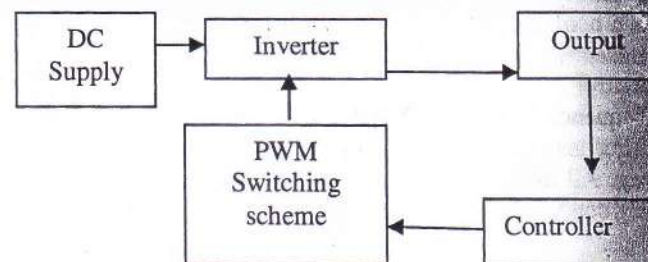


Fig. 1. Block diagram

Power circuit consists of DC input, full bridge inverter and PWM switching scheme and Controller.

The inverter consists of arm A and B arm. The B arm is switched at Low Frequency to achieve low switching losses and the A arm is switched at high Frequency for the better output regulation. Proposed scheme uses Unipolar switching scheme. The soft-switching of the main switches can be achieved using ZVS technique.

The circuit configuration for Unipolar PWM inverter is shown in figure 2 and figure 3.

B. Single phase Unipolar PWM inverter

Inverters are those which convert DC into AC. The source can be either current source or voltage source corresponding



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CERTIFICATE OF PUBLICATION

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Mr. Sathisha K

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Automation of Ration Card Using RFID and GSM Technique

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Abstract RFID based automatic ration system is an approach in public distribution system useful for more efficient, accurate and automated technique of ration distribution. The conventional ration distribution system has drawbacks like inaccurate quantity of goods, low processing speed, large waiting time and material theft in ration shop. In this paper, proposed an Automatic Ration Materials Distribution Based on GSM (Global System for Mobile) and RFID (Radio Frequency Identification) technology instead of ration cards. To get the materials in ration shops need to show the RFID tag into the RFID reader, then controller check the customer codes and details of amounts in the card. After verification, these systems show the amount details. Then customer need to enter they required materials by using keyboard, after receiving materials controller send the information to government office and customer through GSM technology.

Keywords LCD, Microcontroller, RFID, GSM

1. Introduction

The ration distribution system is one of the largest government's economic policies in India. Its main motto is to provide food grains (sugar, wheat, rice, kerosene etc.) to the people at affordable rates. The network of the ration shops is spread all over in India to provide food security to the people. This distribution of ration is controlled and monitored by central government, along with the state government. But it has so many limitations. Most of the ration shopkeepers keep fake ration cards with them. Due to fake ration cards, the dealer receives the extra ration from higher authority and he sales it into the open market. The dealer may not provide a sufficient amount of food grains to consumers. Most of the time people are not aware of the availability of ration in ration shop. The dealer may sale ration at higher rates than recommended by the government or he may do wrong entries in register. In this way, in the current situation we are facing problem of corruption in public distribution system. There is no such effective system through which government gets acknowledgement of consumption of food grains by people. Automatic Ration Dispensing System presented here is an advanced system useful for the efficient way of ration distribution. This project is designed to minimize the manual intervention in the process of ration distribution, so that more transparency & efficiency can be maintained. Our project

focuses on design and implementation of Automation of Ration Shop. In this project, the proposed concept is to replace the manual work in public distribution system. The ration distribution system is automated by using ATMEGA328. This automated ration system replaces the conventional ration card system by RFID card. In this project, we have proposed an Automatic Ration Materials Distribution Based on GSM and RFID Technology to avoid the drawbacks. RFID act as ration card and other purpose such as RC book, insurance details, service details etc. GSM used to communicate the information between the two people or more than two persons to update the information depends on the requirements. Radio-frequency identification (RFID) based access-control system allows only authorized or responsible persons to get the materials from ration shops. An RFID system consists of an antenna or coil, a transceiver (with decoder) and a transponder (RF tag) electronically programmed with unique information. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. The embedded controller is pre-programmed in such a way to perform the operations. In this automated ration shop government have control over all transaction that occurs in ration shop. Mainly in this project we are distributing rice and kerosene. Rice is stored in a container on the table. The rice is measured by load cell and distributed through motor mechanism. Kerosene is kept in another container and its distribution is controlled with a solenoid valve. Figure 1 shows the block diagram of automated ration system.

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Concept of Solar and Pedal Powered Electric Bicycle

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Abstract Global warming and scarcity of traditional resources are becoming major problems in the current scenario. Due to the economic challenges India is facing in the automotive sector, the hybrid bicycle market has a huge growth potential. The main objective is that it can be used in remote or rural places, where the energy generated by pedaling is utilized to motor the cycle during commute. It makes use of the abundantly available solar energy which makes it a viable means to travel as well as a means to light up houses. The proposed model consists of a Solar panel, PMDC machine and a detachable battery. The motor is connected to the bicycle through suitable chain drive system. An electronic controller assists the control of the vehicle speed, charge output of the panel and prevents battery discharge when not in use. It inherits protection logic for voltage and current fluctuations and prevention of overcharging of battery during generation. It can also be charged using an AC supply when not in use. This project simplifies riding with minimal effort on flat paths as well as gradients. In addition to this, solar energy utilization and hybrid economy ensures a cleaner and more economical solution to the energy crisis. Boost converter raises the generator output of 6V to 13V as input to the battery with 80% duty cycle.

Keywords PV Panel, Buck-Boost Converter, DC Motor

1. Introduction

The current trend in the power sector is to change societies dependent on fossil fuels, to a world opting for alternate renewable resources, for their energy requirements, so as to conserve the natural energy [1, 2]. Soon the world is going to be depleted of all - nonrenewable resources, like oil and gas reserves, if the world's demand for energy from fossil fuels continues at the present rate.

This idea is an example of replacing conventional vehicles used for transportation, which are dependent on fuel, with a more cost effective and environment friendly system, dependent on electricity, since it is the most efficient non-polluting source of energy known to man-kind today.

2. Materials and Methods

Cycle: A normal gearless cycle is required to generate the power; it is being used as a prime mover, and also as the means of transportation [3, 4].

DC machine: A 200W DC machine is used to convert electrical energy to mechanical energy and vice-versa. The power from the rotation of the pedal is fed to the battery through this DC machine. And it rotates the wheel during motoring.

Solar Panel: This 30W 12V Panel converts solar energy to

electrical energy and supplies it to the battery. It is equipped with a charge controller which prevents battery from overcharging.

Battery: The 12V battery stores the energy in electrical form, it is supplied charge from the solar panel and DC machine working as generator. Since it is detachable, we can use the charge in it for non-transportation purposes also. **Sprocket-chain gear assembly:** This mechanism allows us to run the shaft of the generator at rated speed of 1500rpm from the normal riding speed of the bicycle; and vice-versa.

Mechanical Switching: There is a DPDT switch, which enables the rider to go to motoring mode when there is charge in the battery and also allows the system to trip the battery while the charge is below specified limits. Acceleration control is optional.

The AC step-down Rectifier circuit at power frequency is used to charge the battery to full capacity (12V) while parked near AC mains plug point. The step-down transformer brings down the value of voltage from 230V to 12V, while the rectifier circuit converts it into regulated and filtered DC 12V. It is then fed into the battery through the power electronic protection circuit. The circuit prevents the battery from overcharging by tripping the supply once it is fully charged, and also gives an indication. Now the bicycle is ready to be motored. On travelling, the motor can be switched on, by the user, whenever its assistance for riding is required and the power electronic circuit supplies the charge of the battery to the motor. There is a decrease in charge when motoring takes place. Now in case the rider is going down-hill or speeding up in a level road, he can switch over to generation by pedaling action by using the circuit buttons provided. Now the DC machine can act as a generator,

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A Review on Methods used for Reliability Assessment of Power Electronic Systems

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ABSTRACT

The power electronic techniques provide compact and high-efficient solutions to power conversion. With wide-spread application of power electronic systems across many different industries, their reliability is being studied extensively. This paper makes a comparative study on the major aspects in the assessment of power electronics reliability available in literature. Also it provides a brief overview on the assessment methods for reliability of power electronic systems.

Keywords

Physics of Failure, MILHDBK, Fault Tree Analysis, Matlab/Simulink.

1. INTRODUCTION

POWER electronic systems play an increasingly important role in adjustable-speed drives, unified power quality correction, utility interfaces with renewable energy resources, energy storage systems, and electric or hybrid electric vehicles (HEVs). For a photovoltaic (PV) generation system, the cost of failure is equal to the value of the energy that would be generated while the system is down plus the cost of repairing and replacing parts. The power electronic techniques provide compact and high-efficient solutions to power conversion. However, introduction of power electronic techniques into these application fields challenges reliability of the overall systems. One of the concerns related to reliability lies in the power semiconductor devices and electrolytic capacitors that are the most vulnerable links. Most of power electronic converters are not equipped with redundancy. Therefore, any fault that occurs to the components or subsystems of the system will lead to shutdown of the system. These unscheduled interruptions not only cast significant safety concerns, but also increases system operation cost and partially offsets the benefits of introducing power electronic systems. Over the past several decades, much attention has been directed to the reliability of power electronic systems.

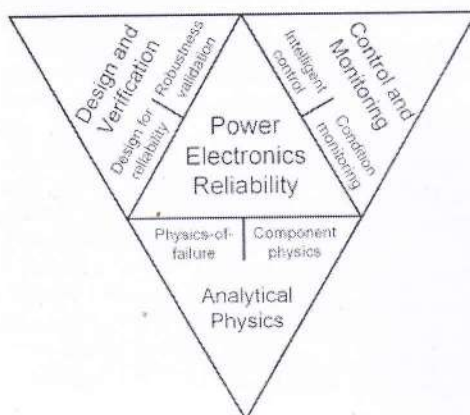


Fig.1 power electronic reliability research needs seen from today.

The three major aspects of power electronics reliability are from physics-of-failure (PoF) analysis of critical power electronic components, state-of-the-art design for reliability process and robustness validation, and intelligent control and condition monitoring to achieve improved reliability under operation.

To map the reliability from component level to the system level, Reliability Block Diagram (RBD), Fault-Tree Analysis (FTA) and state-space analysis (e.g. Markov analysis) are widely applied methods. The three methods are conventionally applicable to constant failure rate cases, which are corresponding to the handbook based reliability prediction methods. It should be noted that the system reliability depends not only on components, but also on packaging, interconnects, manufacturing process, and human errors. There are several major challenges and opportunities in the research on reliability for power electronic systems [1]. Various methods for the assessment of reliability of power electronic system have been suggested in literature namely

2. System level reliability based on Physics of Failure (PoF).

Physics of Failure approach is a methodology based on root-cause failure mechanism analysis and the impact of materials, defects and stresses on product reliability. Failures are classified into two types caused by overstress and wear out respectively. Overstress failure arises as a result of a single load (eg. over voltage) while wear out failure arises because of cumulative damage related to the load (eg. temperature cycling). IGBT modules are focused in the case study for study of thermal effect based on root cause failure mechanism analysis, defects and stress on product reliability, for a 2.3 MW wind power converter. Also lifetime prediction of these modules are evaluated [2], [4]. The case study for DC-link capacitors is performed on a 1 kW 400 V DC-link PV inverter. According to the electrical stress analysis, the thermal stresses of the capacitors are estimated based on their specific thermal models. The lifetime of the selected capacitors is therefore estimated based on the mission profile, operation mode and specific lifetime model [3].

3. By calculating failure rates based on MILHDBK, military handbook for the identification of electronic components.

Prediction of power converter reliability using part stress method can be performed once the thermal and electrical stresses are known. The MILHDBK[20] documents provide useful details on thermal and electrical stresses in components and the MIL-STD-756 [21] provide details on reliability analysis which become an integral part of the design process [5]. Comparative reliability evaluation of four DC/DC

A Review on Methods used for Reliability Assessment of Power Electronic Systems

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Abstract—With wide-spread application of power electronic systems across many different industries, their reliability is being studied extensively. This paper makes a comparative study on the major aspects in the assessment of power electronics reliability available in literature. Also it provides a brief overview on the assessment methods for reliability of power electronic systems.

Keywords: physics of failure, MILHDBK, fault tree analysis, Matlab/Simulink.

I. INTRODUCTION

POWER electronic systems play an increasingly important role in adjustable-speed drives, unified power quality correction, utility interfaces with renewable energy resources, energystorage systems, and electric or hybrid electric vehicles (HEVs). The power electronic techniques provide compact and high-efficient solutions to power conversion. However, introduction of power electronic techniques into these application fields challenges reliability of the overall systems. One of the concerns related to reliability lies in the power semiconductor devices and electrolytic capacitors that are the most vulnerable links. Most of power electronic converters are not equipped with redundancy. Therefore, any fault that occurs to the components or subsystems of the system will lead to shutdown of the system.

These unscheduled interruptions not only cast significant safety concerns, but also increases system operation cost and partially offsets the benefits of introducing power electronic systems. Over the past several decades, much attention has been directed to the reliability of power electronic systems. The three major aspects of power electronics reliability are discussed, respectively, which cover from physics-of-failure (PoF) analysis of critical power electronic components, state-of-the-art design for reliability process and robustness validation, and intelligent control and condition monitoring to achieve improved reliability under operation.

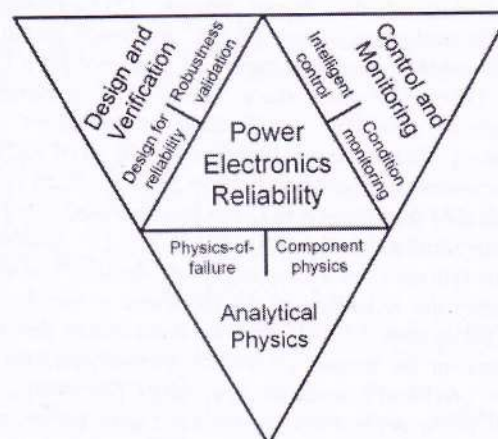


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II. SYSTEM LEVEL RELIABILITY BASED ON PHYSICS OF FAILURE (POF).

IGBT modules are focused in the case study for study of thermal effect based on root cause failure mechanism analysis, defects and stress on product reliability, for a 2.3 MW wind power converter. Also lifetime prediction of these modules are evaluated [2], [4]. The case study for DC-link capacitors is performed on a 1 kW 400 V DC-link PV inverter. According to the electrical stress analysis, the thermal stresses of the capacitors are estimated based on their specific thermal models. The lifetime of the selected capacitors is therefore estimated based on the mission profile, operation mode and specific lifetime model [3].

REAL TIME BUS TRACKING USING RFID AND GSM MODULE

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Abstract—This paper summarizes our work on the design and implementation of Real Time bus tracking using RFID and GSM Module-based system for tracking the location of buses provided for public transportation especially for rural areas. The system consists of modules: In-Bus Module and Bus-Stop Module. The In-Bus Module consists of RFID tag installed in every bus and Bus-Stop Module is installed at every bus stop and consists of GSM, RFID Reader, Real Time Clock and LCD display all interfaced to a Arduino Mega2560. Passive RFID Reader is used for tracking the bus and the information such as bus name, route number and its location is sent to Arduino Mega2560 and further this information is displayed on the LCD screen and information regarding coordinates of the bus are sent by service provided by GSM networks or SMS. Arduino microcontroller is the main controlling device which controls and synchronizes all the operations by receiving the data from RFID tag.

Keywords—Arduino Mega2560, GSM, LCD Display, Real Time Clock, RFID reader, RFID Tag.

I. INTRODUCTION

In this fast life, everyone is in hurry to reach their destinations. In this case waiting for the buses is not reliable. People who rely on the public transport their major concern is to know the real time location of the bus for which they are waiting for and the time it will take to reach their bus stop. Waiting at the bus stops for longer periods especially in the morning when they have to reach the offices or colleges in time. The travel time of buses varies depending on several external parameters such as traffic and accidents. Effective transportation system has effective movement of goods and people which leads to better

quality of life and better social and economic growth of the society. Transportation system forms the heart of the system. With the population boom vehicle population is also rapidly increasing which is further leading to heavy traffic. Optimal solution to this problem is the use of public transport. However public transport schedules are unreliable and waiting for bus for long results is waste of time. But a system that provides complete information namely, the bus number, bus timings, and most importantly tracking the real time bus location coordinates and finding correct time the bus will take to reach its bus stop.

II. NEED FOR THE BUS TRACKING SYSTEM

Main objective of GSM based bus tracking systems is to get real time location coordinates of the bus and the bus arrival time so that passengers living in rural areas and also where the time between two consecutive buses is too long can make better travel decisions and also to make user friendly system to track location and get approximate bus arrival time without accessing internet. Main effects of such a bus tracking system are reduced wait time, reduced uncertainty time, ease of use and passenger satisfaction.

III. EXISTING WORK

Web based vehicle tracking system comprises of the vehicle-mounted tracking devices, central server system and the web based application. Through the web based application users can track the bus graphically using the web based systems also enables users with different operating systems platforms to get the details with the help of internet access. Bus tracking system using Android

High Voltage-Boosting Converter with Improved Transfer Ratio

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Abstract In this paper, a novel high voltage-boosting converter is presented. This converter is constructed based on parallel and series combination of bootstrap capacitors and boost inductors during charging and discharging respectively. The proposed converter gives the output voltage 160 V DC from 24 V DC at duty cycle of 65%. The proposed converter gives a high efficiency, low output ripple and high transformation ratio by reducing the conduction losses and switching losses. Simulation of the circuit is obtained in MATLAB/Simulink.

Keywords Voltage-Boosting Converter, Voltage Conversion Ratio, Bootstrap Capacitors, Boost Inductors

1. Introduction

Boost converter are widely used in industry for the following applications such as discharge lamp driver, UPS, Motor drivers, and PV system [1, 2]. The boost converter or step up converters is simple in structure, but the voltage conversion ratio is less, whereas the fly-back converter possesses a high voltage conversion ratio but the corresponding leakage reactance is large. The voltage conversion ratio can be improved when the number of inductor in the circuit is increased, and these inductors are connected in series during their demagnetizing period [3, 4].

Normally isolated boost converters boosts the voltage to much higher voltages with wide input ranges typically in the range of 30-60V. Since the DC-AC converter operates at high voltage and is widely used in high power applications such as in UPSs, motor drives, solar converters etc., it is required to have low voltage to high voltage DC-DC converter with high efficiency.

High boosted output voltage is obtained by discharging the energy stored in the inductor and capacitor along with input voltage into the output terminals. In this paper, a brief illustration of the operation of high voltage boosting converter is given along with some simulation results provided to demonstrate the effectiveness of such converters. In [5-8], high voltage conversion ratios are achieved by coupling inductors, but the voltage spikes due to the accompanying leakage inductances and the complexity in the corresponding circuit analysis are unavoidable.

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2. Proposed Converter Topology

In this paper a new high voltage boosting converter is proposed. The circuit is shown in figure 1.

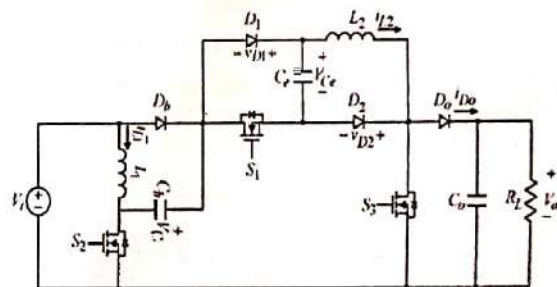


Figure 1. Proposed High voltage boosting converter

The converter contains three MOSFET switches S_1 , S_2 , and S_3 , two bootstrap capacitors C_b and C_e , three bootstrap diodes D_b , D_1 , and D_2 , one output diode D_o , two inductors L_1 and L_2 , one output capacitor C_o , and one load resistor R_L . In addition, the input voltage is signified by V_i , the output voltage is represented by V_o .

3. Basic Operating Principles

3.1. Continuous Current Mode Operation

Figure 2 shows the illustrated necessary waveforms of v_{gs1} , v_{gs2} , v_{gs3} , v_{L1} , v_{L2} , i_{L1} , and i_{L2} for the proposed circuit operated in CCM with L_1 equal to L_2 .

3.1.1 Mode 1 [$t_0 - t_1$]: The current flow in the proposed circuit during mode 1 in CCM is shown in figure 3. As in the

Low cost speed controller for Brushless DC motor using sensorless technique

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Abstract-Brushless DC (BLDC) motors are widely used in aerospace, space vehicles, electric vehicles, robotics and other motion control applications. They are replacing brushed DC motor and induction motors because of their advantages like better speed-torque characteristics, high dynamic response, high efficiency, long operating life, noiseless operation, and high speed range. In this paper an electronic speed controller circuit is presented with MOSFET as switching element driven with low cost MOSFET/IGBT gate driver ICs. The gate driver IC eliminates the use of multiple power supplies in the circuit. This paper explains the speed control method by sensing the back emf. In this paper overall circuit is simulated and implemented in hardware.

Index terms-BLDC motor, gate driver circuit, charge control circuit

I. INTRODUCTION

BLDC motors are synchronous motor whose stator consists of stacked steel laminations placed in the stator slots and rotor consists of permanent magnets[1]. Based on the windings in the stator BLDC motors are classified into two; they are trapezoidal and sinusoidal motors. As their names implies, the trapezoidal motor generate back EMF in trapezoidal shape and the sinusoidal motor generate back EMF in sinusoidal shape[2]. The rotor is made of permanent magnets with alternate North (N) and South (S). The alloy material that has high magnetic density per volume is used as permanent magnets. Neodymium (Nd), Samarium Cobalt (SmCo) is the most used rotor magnets.

Fig.1 shows 3 phase bridge circuit for driving 3 phase BLDC motor. In each commutation steps one of the three windings is energized to positive power (current enters into the winding) and the second to negative (current leaves the winding).The third will keep in a non-energized condition from where the back emf is sensed. Phase voltages are shown in Fig.2. Torque is generated due the interaction between the stator magnetic field and the permanent magnets in the rotor[3]. The motor will keep running only when the rotor magnets catch up the magnetic field produced by the stator windings.

BLDC motors can be commutated by sensing the back EMF signals or by sensing the Hall sensor signals [4] (Hall sensors A, B, C are mounted on the stator at 120° intervals).

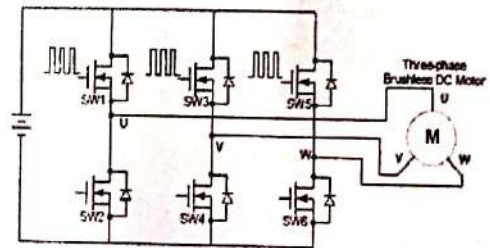


Fig.1 Three phase bridge circuit

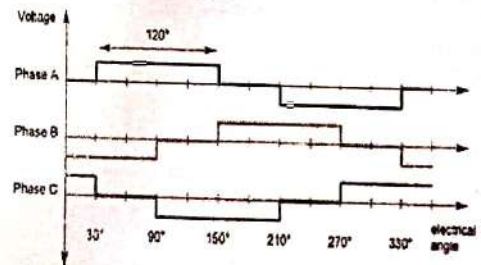
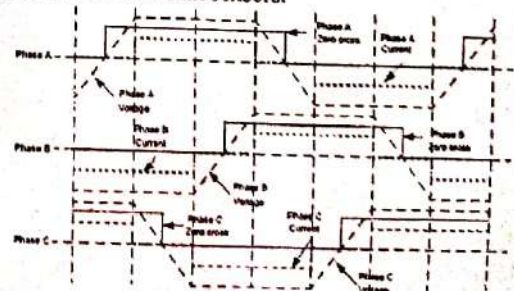


Fig.2 Phase voltages in A, B, C windings

Relationship between phase voltage and zero crossing [5] is shown in Fig.3. Hall sensor mounted motors can be controlled easily as its initial position is known. Here we are considering only back emf because the selected motor doesn't mounted with hall sensors.



Study on impact of different light levels on human Circadian Rhythm

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Abstract— This paper makes an attempt to study the impact of different light level on human circadian rhythm. The pattern of light/dark cycle due to revolution of earth brings about the biological changes in humans. This biological changes in humans can be observed as changes in circadian rhythm. The hormone production, core body temperature, sleep/awake cycle exhibit the circadian rhythm. Sleep/awake cycle is governed by production of hormone. The progression of Melatonin is such that it is maximum during the night period and minimal during the day. The study considers two conditions first one normal lighting with bright light illuminance of 500 lux during day and minimum of 10 lux during night. Second condition include bright light illuminance of 1000 lux at night and minimum light of 10 lux during the day. The plots obtained for the two lighting conditions is given in the paper. The analysis reveals that bright light at night suppresses the melatonin and leads to more activation of neuron cells maintaining alertness at night. A low light level of 10 lux at night triggers Melatonin during the night and brings sleep.

Keywords— Circadian Rhythm, illuminance, sleep/awake, cycle, correlated colour temperature.

Introduction

The daily revolution of earth brings light /dark pattern. The human body is naturally adopted to this change and is synchronised with generation of hormones in conjunction with the light pattern. The core body temperature, progression of hormones, sleep/awake cycle follow a 24 hr cycle known as circadian rhythm. This circadian rhythm is synchronised with natural light/dark cycle and if unbalanced it can be reset to original rhythm of 24 hrs using natural light. Rea et al has shown the spectral sensitivity to light is brought out by melatonin suppression [1,2]. The photopic information impinged on to the retina is conveyed to Suprachiasmatic nucleus (SCN) through intrinsically photosensitive retinal ganglion cell (ipRGCs) through retinohypothalamic tract (RHT). The neurophysics and neuroanatomy studies by Rea et al has resulted in model capable of predicting the nocturnal melatonin suppression by polychromatic or monochromatic

light stimulation. The suppression of melatonin at 440nm is determined by the depolarising S cone [1]

$$CS = \left[\left(a_1 \int P_\lambda M_\lambda d\lambda - b_1 \right) < a_2 \left(\int P_\lambda S_\lambda d\lambda - k \int P_\lambda V_{10\lambda} d\lambda \right) - b_2 \right] - a_3 \left(1 - e^{-\left(\frac{L+M}{L+M+1} \right)} \right) \quad (1)$$

$$\text{for } \int P_\lambda S_\lambda d\lambda - k \int P_\lambda V_{10\lambda} d\lambda \geq 0$$

$$CS = a_1 \int P_\lambda M_\lambda d\lambda - b_1 \quad (2)$$

λ - is a diode representation

M_λ - melanopsin containing RGC spectral efficiency peaking at 480 nm

$V_{10\lambda}$ - L + M spectral efficiency

V'_λ - rod spectral efficiency

S_λ - S cone spectral efficiency

P_λ - spectral irradiance at eye $w/m^2/nm$

parameters represent interactions with photoreceptor types $K = 0.31$, $a_1 = 0.285$, $a_2 = 0.2$, $a_3 = 0.72$

constants represent the thresholds and dynamic characteristics of the photoreceptor type $b_1 = 0.01$, $b_2 = 0.001$, $rodsat = 6.5$

CS - circadian spectrally weighted irradiance w/m^2

II CIRCADIAN ACTION FACTOR

Gall et al proposed a model for the evaluation of circadian lighting. The ratio of circadian and photometric quantities is called as circadian action factor acv [3].

$$acv = \frac{\int_\lambda c(\lambda) P(\lambda) d\lambda}{\int_\lambda v(\lambda) P(\lambda) d\lambda} \quad (3)$$

$p(\lambda)$ spectral irradiance.

The evaluation of acv in terms of chromaticity coordinates is given by

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MR.

Design of a programmable flyback based FES system for restoring foot drop in stroke rehabilitation

K. Subramanya, Member, IEEE, Ajithanjaya Kumar M. K.

Abstract— Functional electrical stimulation (FES) is an assistive neurorehabilitation technology that utilizes low levels of electrical currents for neuromuscular stimulation of paralyzed extremities resulting from cerebral stroke or similar conditions. Optimization of the FES circuit is essential to reduce power consumption and to minimize power dissipation that can cause tissue damage. In this work, an improved foot pressure sensor based programmable, single channel, multi-pattern transcutaneous FES system was developed using power electronic systems and tested to correct foot-drop in stroke patients. The FES prototype developed herein uses a unique flyback circuit design and the electrical stimulation is tuned to achieve maximum functional response with minimal power drain. The flyback also provides galvanic isolation required by patient safety standards. The development of multi-pattern stimulation envelopes with variable intensity profile is an important contribution of this work, since this approach enables controlled and customized treatment depending upon the patient's status and stroke type, so that the stimulation can be much safer and more effective. With slight modifications, the circuit can also be used for rehabilitation of children with spastic cerebral palsy. The prototype is non-invasive, portable, flexible, low-cost and suitable for point-of-care applications.

Keywords— Programmable, Neuromuscular, stimulator, Flyback converter, Foot drop, Stroke

I. INTRODUCTION

TECHNOLOGY can turn a disability into a different ability. Assistive technologies are devices that can be used to help people with disabilities to become more independent and productive in their home and communities [1]. Functional electrical stimulation (FES) or neuromuscular electrical stimulation (NMES) is an important assistive neuro-rehabilitation technology that utilizes low levels of electrical currents to stimulate nerves innervating muscles affected by paralysis resulting from cerebral stroke, cerebral palsy, spinal cord injury (SCI), or similar conditions (Reviewed in Subramanya *et al.* 2012 and Arya *et al.* 2012) [2,3]. Foot drop following stroke is a common physical disability characterized by dropping of the forefoot due to paralysis of a group of muscles in the leg. Physiotherapy along with a brace or splint is routinely used in the rehabilitation of foot drop. However, there is no concrete evidence to suggest any physiotherapy treatment actually works better than another in promoting the recovery of lower limb function [2].

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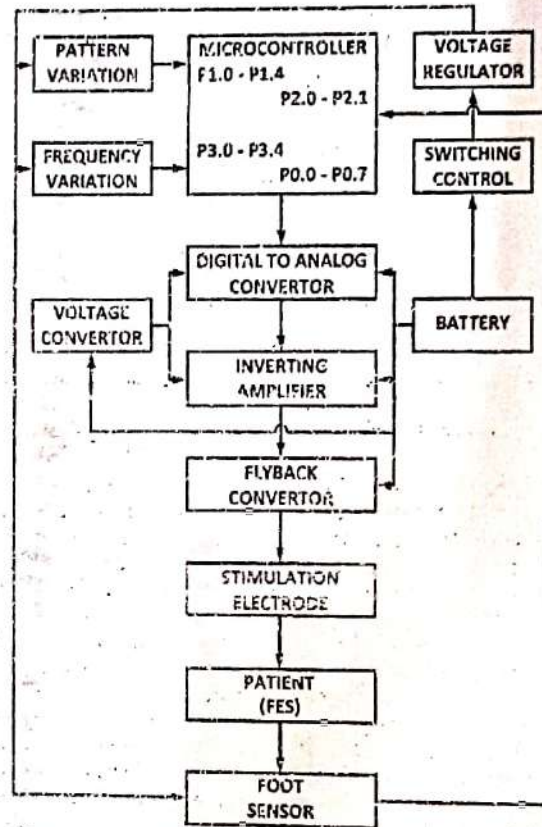


Figure 1. The overall schematic diagram of the programmable and portable FES system.

Liberson and his colleagues (1961) first introduced the application of electrical stimulation to correct foot drop in stroke patients [4]. Since that time, the application of electrical current to restore neuromuscular function, using either surface or implanted electrodes, is gaining popularity among researchers and clinicians involved in rehabilitation. Most commercially available foot drop stimulators are bulky and expensive and generate single pattern with fixed intensity at the output and often require an expert therapist to operate the device. An electrical stimulator capable of generating different pattern of waveforms at the output stage is ideal for precision medicine. In this work, an improved foot pressure sensor based, programmable, single channel, multi-pattern transcutaneous FES system was developed using unique flyback circuit design, and tested to correct foot-drop in stroke patients. The overall schematic of the developed FES system is shown in Fig. 1. The prototype is non-invasive, portable, flexible for various clinical applications in home and in clinics, low-cost and suitable for developing nations.

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Essence of Social Class on Buying Behaviour

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Professor, Department of Business Administration, St. Joseph Engineering College, Vamanjoor, Mangalore-575028

Online published on 30 June, 2018.

Abstract

Apart from the social factors social class plays an important role in the buying decision of consumers. Social class is a measure of social positions on which each member of the society can be placed. It is interesting to understand the essence of social class on buying behaviour by understanding its impact on buyer's purchase decisions. A micro study was conducted on customers of Excelsior Nissan Mangaluru to unearth the impact of social class on their buying behaviour. Though there is no relation between social class

“The impact of oil price crisis on financial performance of commercial banks in Bahrain”

AUTHORS	Iqbal Thonse Hawaldar , Babitha Rohit, Prakash Pinto, Rajesha T. M.
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The Impact of Welfare Measures on Employee Satisfaction at Mangalore Refinery and Petrochemicals Limited.

- **Source:** Drishtikon: A Management Journal . Sep2016-Mar2017, Vol. 8 Issue 1, p30-48. 19p.
- **Author(s):** Ganesh, Anjali
- **Abstract:** To sustain and maintain the happy labour force is the challenge of the day which could effectively be dealt through one of the weapons, welfare measures. Unless people are well taken care of by the organization they may not be satisfied to stay in the organization. The study intends to find out the welfare measures at Mangalore Refinery And Petrochemicals Limited, (MRPL) Mangaluru and tries to understand employee satisfaction towards it. Welfare facilities provided by MRPL are exemplary to other organizations in general and manufacturing industries in particular. In this respect MRPL has played a very important role in extending the welfare measures and keeping the employees satisfied.
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Employee Engagement-A Means to Employee Involvement

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JEL Classification Code: M12

Online published on 20 August, 2016.

Abstract

Organisations rely heavily on financial measures such as profitability, revenue, market share and cash flow, but human-oriented aspects, such as employee engagement and involvement, are not given much importance due to which the organisation's outcomes such as customer satisfaction, retention, productivity and

THEORETICAL MODELS EXPLORING THE LINK BETWEEN HUMAN RESOURCE MANAGEMENT PRACTICES AND ORGANISATIONAL PERFORMANCE: A REVIEW

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ABSTRACT

This paper discusses twelve prominent conceptual models that emerged during the time period 1984 to 2008 in the area of Human Resource Management that probes the link between human resource practices and organisational performance, popularly known as the 'black-box'. The analysis revealed that there is no consensus among the researchers regarding how many boxes needs to be included in the link and the same inconsistency applies to the minimum and maximum number of variables in each box. Also, there is no unanimity in the variables that are to be regarded as the end link of the chain. All though many studies are conducted in later years too no noted new theories emerged till date that explored the link differently. Thus, there is a greater need to carry more in-depth research in this study area.

Keywords: Black-box Models, Human Resource Management Practices, Organisational Performance

1. INTRODUCTION

Decades have rolled by since the first spark of debate started on the link between Human Resource Management (HRM) and Organisational performance. But this debate still looks as if it is untouched even after years of efforts by eminent research scholars to unravel the mechanisms of this link. This is evident from the amount of scholarly articles that are published over the years but the work done till date still looks insufficient. This is because the study area relates to human resource of an organisation which in turn is related to 'Organisational Behavior' discipline. Behavior of an individual can never be predicted accurately and therefore trying to probe the Human Resource – performance link has turned out to be a never ending and a daunting task thereby rightly being termed as 'the Black-Box' in HRM literature. This grey area in HRM was further probed to find out the process through which the employees of an organisation contributed to its performance. One of the initial major attempts to gain insight into this linkage was the Harvard model in the year 1984 followed by 11 other major works that emerged till 2008. Although plenty of research works got published in this area since 2008, these works were predominantly based on the earlier models. Thus, no major theoretical models emerged after 2008. The next sections of this paper make an attempt to analyse and compare the above mentioned models and draws conclusions based on the analysis.

2. THEORETICAL MODELS EXPLORING HUMAN RESOURCE PRACTICES AND PERFORMANCE LINKAGE

Over the years, attempts are constantly made to link HRM and Organisational performance which has led to the development of various models over the years. The most prominent models of HRM – Performance link are discussed below:

2.1 Model by Beer et. al., 1984 - The Harvard Model

The Harvard model brings out the integration between business and society by projecting HRM as a system that connects objectives of the organisation into societal well-being and back into human resource activities. It initiated the idea that people in an organisation should be regarded as assets instead of variable costs. Developed by Beer et. al. (1984), the Harvard Model, considered as a soft model of HRM, offers significant insights into HRM-Performance linkage by stating that the HRM policies should be defined in tandem with environmental factors and stakeholders' concerns, focusing ultimately on achieving the wellbeing of individuals, organisation and the society through employee commitment, competence development, coherence among employees and cost effectiveness.

A CONCEPTUAL STUDY ON INVESTMENT PATTERN OF EMPLOYEES FROM SELECT SECTORS

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ABSTRACT

Investment is the employment of funds with the hope of getting return. It is an activity engaged by people who have savings. Generally salaried people invest their savings in order to lead future requirements. A variety of investment alternatives namely Stock market, Post office savings, gold and Jewellery, Real estate, Life insurance products, Commodity market, Bank deposits and Government securities are available in the market, in which investors deposits their money from the current earnings. This paper tries to explore the factors that influence the investment preference by taking into consideration the various studies conducted on the same and related sectors. This paper tries to highlights on the basic concepts of investment patterns of Individuals belonging to different sectors.

Keywords: Investment, Savings, Employees, Sectors

INTRODUCTION

An investment is a commitment of funds made in the anticipation of some positive rate of return. If the investment is properly undertaken, the return will be proportionate with the risk the investor assumes. The true investor is interested in a good rate of return, earned on a rather consistent basis for a relatively long period of time. Investment preferences differ from Individual to Individual depending on the circumstances in which they invest. The important characteristics of investment are return, risk, safety, income stability, appreciation, liquidity and transferability. Deciding on the selection of investment avenues becomes more complex as plenty of investment alternatives are available in the market. The investors able to invest their money in the various investment alternatives based on their risk tolerance. This paper tries to analyse the basic concepts of investment preferences of employees from select sectors.

OBJECTIVES OF THE STUDY

1. To highlights on the basic concepts of investment patterns of Individuals belonging to different sectors.
2. To explore the factors that influence the investment preferences by taking into consideration the various studies conducted on the same.

REVIEW OF LITERATURE

K V Ramanathan and Dr. K S Meenakshi Sundaram (2015) studied on "A Study on Investment Preferences of Bank Employees" and examined that most of the investors look after the safety of their investment rather than considering high returns. Taking decision on investment avenues becomes quite complex. Researchers have collected primary data from 130 Bank Employees through a close ended questionnaire. From the study, it is proved that investment in Life Insurance being the first preference for Respondents whose investments are up to Rs. 7.5 lakhs and that of respondents above Rs. 7.5 lakhs category prefer gold/ Jewellery as their first preference of investment. Bank deposit and Gold/ Jewellery placed second preferences of investors. Also found that positive correlation exists between the variables Income and Investment. There is strong relationship between the variables. It is proved by Chi-square test that there is significant relationship exist between income and investment of the respondents.

Deepak Sood and Dr. Navdeep Kaur (2015) studied on "A Study of Saving and Investment Pattern of Salaried Class People with Special Reference to Chandigarh" and study analysed that the main objective is to determine the relationship between the savings and investment pattern among the salaried class people of Chandigarh. It is proved from the study that there is relationship between Annual Savings and Age, Income, Sector wise Employment, Education of people at Chandigarh. It was propounded by the study that the most preferred investment options are LIC and Bank Deposits and most of the factors influencing investment decisions were high returns, tax benefits and safety.

Prof. CA Yogesh P. Patel and Prof. CS Charul Y. Patel (2012) studied on "A Study of Investment Perspective of Salaried People (Private Sector) and examined that majority of Investment of Male respondents is in the Stock market and least into Gold but whereas the Female respondents preferences for Government securities and Gold and least into Real estate. And also proved from the study that the majority of Male

INVESTORS PERCEPTION AND ATTITUDE TOWARDS EQUITY SHARE TRADING: AN EMPIRICAL STUDY IN MANGALURU CITY

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Professor², Department of Business Administration, St. Joseph Engineering College, Mangalore

ABSTRACT

Stock market is a peculiar market even though investors can analyze it by using different tools and techniques before taking investment decisions. While choosing equity or stock to invest in or trade into, different factors are considered which make investment decisions complicated. The key drivers for investment decisions are demographic factors, attitudinal factors and socio-economic factors. Different sources of information are taken into consideration by investors while making investments. These sources can be magazines, journals, newspapers, television, internet, radio advertisements and company sources, information provided by friends, relatives, peers and investment advisors. This paper tries to explore the current investment trends amongst individual investors in Mangaluru and to ascertain the investor perception about professional financial advisory services. This paper tries to highlights on investor opinion about information technology / internet as a means of investment planning and trading.

Keywords: Investment, Savings, Equity

INTRODUCTION

Equity trading is a buying and selling of stocks, through internet in an area of commercial activity. The arrangement of establishment encourages the trading of stocks among purchasers and vender's. For the development of electronic exchange a vast division of securities exchange are not midway situated in a specific area as a result of each exchange are made through web based exchanging.

Exchange is the responsibility for services from one individual to another Trade is now and again inexactly called business related exchange or deal. A scheme that permits conversation is known as a market. The first type of conversation was trade, the direct trade of merchandise and enterprises. Later one side of the deal was the metals, valuable metals (shafts, coins), bill, and paper cash.

Current merchants rather all around counsel through a medium of exchange, for instance, money. Hence, acquiring can be secluded from offering, or winning. The development of money (and later credit, paper money and non-physical money) exceptionally revamped and propelled trade. Trade between two dealers is called particular trade, while trade between more than two specialists is called multilateral trade.

Trade exists for man as a result of specialization and division of work, most by far spotlight on a little piece of creation, trading for various things. Trade exists between regions in light of the way that unmistakable locale have a relative good position in the making of some tradable thing, or in light of the way that assorted territories' size considers the upsides of large scale manufacturing. Everything considered, trade at exhibit costs between regions benefits the two zones.

Retail trade contains the offer of items or stock from a to a great degree settled region, for instance, a retail establishment, boutique, or by means of mail, in little or individual bundles for organize use by the purchaser opening arrangement trade is described as the offer of items or stock to retailers, to present day, business, institutional, or other master business customers, or to various wholesalers and related subordinated organizations.

Swapping can likewise allude to the activity performed by brokers and other market specialists in the money related market.

On its affirmation as a stock exchange under the securities contract (control) Act 1956 in April 1993, NSE started exercises in the Wholesale Debt Market (WDM) segment in June 1994. The capital market (values) section started undertakings in November 1994 and exercises in Derivatives parcel began.

The research is an attempt to identify the current investment trends amongst individual investors in Mangaluru and to ascertain the investor perception about professional financial advisory services. Also an attempt is made to ascertain investor opinion about information technology / internet as a means of investment planning and trading.

Talent Management a Vital HR Analytics for Service and Manufacturing

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Abstract

Talent acquisition and management as a part of HR analytics is getting transformed with the emerging technology landscape, mobility, big data analytics, artificial intelligence and machine learning which are expected to cause a colossal shift in the way Talent management will be handled in future. Expectations and aspirations of the employees are increasing. There is severe competition between the companies to attract and retain the best talent irrespective of the situation. Thus, talent management acts as a vital HR Analytics in the organizations to reduce the cost and increase the efficiency. This paper analyses the effectiveness of Talent management as a vital HR analytics in service and manufacturing sector. The study has chosen Mangalore Chemicals and Fertilizers Limited (MCF) in manufacturing category and Diya Systems, Mangalore in software services category. The paper makes an effort to understand the relevant components responsible for talent acquisition and management in Diya Systems Mangalore and MCF Mangalore. Talent management in both the companies was not influenced either by the age or the gender of the employees. The study proposes a Talent Acquisition and Management Model followed by the observations and the findings.


Key words

Talent acquisition, HR analy

Introduction

Organizations that focus maximizing their investment in people will have a significant competitive advantage as they support for managing the talents of the people in a positive way. Organizations are continuously seeking new ways of improving workforce productivity and in this regard the Talent management forms an important part of Human resource Analytics. Talent management is an ongoing, proactive activity. Talent Management is about attracting, identifying, recruiting, developing, motivating, promoting and retaining people that have a strong potential to succeed within an organization (Creelman D., 2004). Talent Management is a term that extends over a wide set of activities, such as succession planning, HR planning and employee performance management. Talent management deals with allocation of resources in the form of compensation, training, coaching, and job assignments to the employees based on their actual or potential contribution to excellence (Berger & Berger, 2004). The industries need to focus more on quality of the talent employed in the organization, than just the quantity of it as the productivity of the employees is one of the core issues in today's competitive corporate world. Sharma and Batnagar (2009) explained the need for talent management in today's competitive world. This is so because there is acute shortage of talented employees in the market, and due to this fact there is a lot of turnover in the organizations. The companies have to incorporate a good talent management strategy by the assessment of talent needs of the

“Testing of weak form of efficient market hypothesis: evidence from the Bahrain Bourse”

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Impact of Stock Splits and Rights Issue Announcements on Market Price: Evidence From India

–Babitha Rohit*, Prakash Pinto**, Shakila B.***

ABSTRACT

The current paper studies the impact of two events i.e stock splits and rights issue announcement on the stock returns of companies listed on the Bombay Stock Exchange. The study consists of a sample of 90 announcements for stock splits and 29 announcements for rights issue during the period 2011-2014. Market model is used to calculate the abnormal returns of securities. Positive Average Abnormal Returns were observed for the two events on the day their announcements, however they are not statistically significant. The study concludes that the Indian stock market is efficient in its semi-strong form.

Keywords: *Semi-Strong, Stock Splits, Rights Issue, Market Model, Abnormal returns*

INTRODUCTION

The stock market plays a significant role in mobilising domestic resources. Efficient stock market is one in which stock prices fully and instantaneously reflects all available relevant information. It is well documented that stocks exhibit large abnormal returns during the period surrounding an equity issue (Lucas and Macdonalds, 1990). Efficient Market Hypothesis progressed from the state of a interest taken seriously

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DAY-OF-THE-WEEK EFFECT: EMPIRICAL EVIDENCE FROM THE INDIAN STOCK MARKET

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Exploring to Map Competencies with Specific Application of 7S Model

Ganesh, Anjali. *International Journal on Leadership*; New Delhi Vol. 5, Iss. 1, (2017): 31-41.

Department of Business Administration, St Joseph Engineering College Vamanjoor, Mangalore, Karnataka, India. Email: anjaliganeshk@gmail.com Article can be accessed online at <http://www.publishingindia.com>

Abstract: Each firm has a list of competencies required and welldefined roles to perform each task efficiently. Each employee needs different competencies for different roles. If the process of mapping the competencies is not done, organisations will end up in creating human liabilities than the assets which will be catastrophically dysfunctional. The present study helps to analyse effectiveness of competency mapping in Karnataka Agencies, Mangaluru, by identifying the key competencies required for different positions in them. 7S model is applied to explore competency mapping practices of Karnataka Agencies. The competencies that are used to perform a task or job such as technical knowledge, functional information, analytical skills, communication skills, planning and organising skills, interpersonal skills, leadership skills, team building skills, problem solving skills, decision making skills, time management skills. The study revealed that creativity and negotiation skills are the most important key competencies used in Karnataka Agencies. Keyword: Technical Knowledge, Functional Information, Analytical Skills, Communication Skills, Negotiation Skills While performing or carrying out any work or task in the organisation, it is very essential that the required job skills should be articulated first so that each individual in the organisation will know the matching skills for performing the work or task. If the process of mapping the competencies is not done, organisations will end up in creating human liabilities than the assets which will be catastrophically dysfunctional. The present study helps to analyse effectiveness of competency mapping in Karnataka Agencies, Mangaluru, a sales and service dealers of Mahindra and mahindra by identifying the key competencies required for different positions in them.7S model is applied to explore competency mapping practices of Karnataka Agencies. Literature Review Competitive advantage depends largely on the ability to activate and use organisational resources effectively. As a result, the focus in the strategic management in general and human resource management in particular the literatures have been focusing on the internal capabilities of organisations including a particular focus on employees' competencies. In this respect the survey of related literature becomes imperative to understand the previous research work carried out by various researchers in the field of competency mapping and their findings mainly from the point of view of establishing the research gap in order to continue further research in the field. The competencies include sets of skills, knowledge, attitudes, and behaviour that a manager or an employee needs in order to be effective in a wide range of managerial jobs and various organisational settings. Many leading companies are looking at ways to link competencies to strategic objectives as well as to compliance with industry Introduction Competency mapping is a crucial and significant exercise for the betterment and development of any organisation. Each firm has a list of competencies required and well-defined roles to perform each task efficiently. Each employee requires different competencies for different roles. Competencies are required by each employee of a firm or organisation, but for each role the required competencies will be of different levels.

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A Case Study on Quality of Work Life with Respect to Dakshina Kannada Co-operative Milk Union Ltd.

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Abstract

Since people are the main resources in an organization, their productivity and efficiency depends upon the work quality they are experiencing in the organization. The basic purpose of Quality of Work Life (QWL) is to provide improved working conditions to the employees so that they contribute their best in the work in particular and organization in general. The study tries to investigate the measures of QWL taken by Dakshina Kannada Co-operative Milk Union Ltd (DKMUL). It was observed that the DKMULs QWL initiatives were exemplary and employees in majority have praised it. The study proposes a model of QWL that can be productively applied to DKMUL in particular and other relevant industries in general based on the findings of the study.

Keywords: Remuneration, Allowances, Safety Measures, Organisational Hierarchy, Experience

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Role of Organizational Variables in Driving Internationalization Behaviour of the Firms

Anuj Aggarwal*

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Abstract:

The Indian economy has witnessed a tremendous growth in the 1990's and 2000's as a result of globalization, technological revolution and innovation. Traditionally, internationalization was understood as a sequential process, which begins with exports, moves on to joint ventures and licensing, and then to wholly-owned subsidiaries in the increasing order of knowledge and investment. However, a new body of research says that a firm may not necessarily follow a particular sequential path based on incremental internationalization, instead it may initiate international operations right from their inception. This paper examines various models of internationalization practiced by firms in India. It seeks to analyze the linkages between organizational variables, innovation and internationalization in the Pharmaceutical and Software sectors. The study is based on primary data gathered from top/senior executives in the pharmaceutical and software sectors through questionnaire survey. The key finding of the study is that Indian firms' use of innovation capabilities to successfully internationalize rests on two main choices – Location and Business Model. The study also attempts to make contribution to the existing literature on international entrepreneurship.

Key Words: *International Entrepreneurship, International Business, Innovation, Internationalization, Indian Pharmaceuticals Sector, Indian IT Sector*

A Study on Outlook of the Employees towards Career Planning and Development at Vivanta by Taj

Anjali Ganesh*

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Abstract:

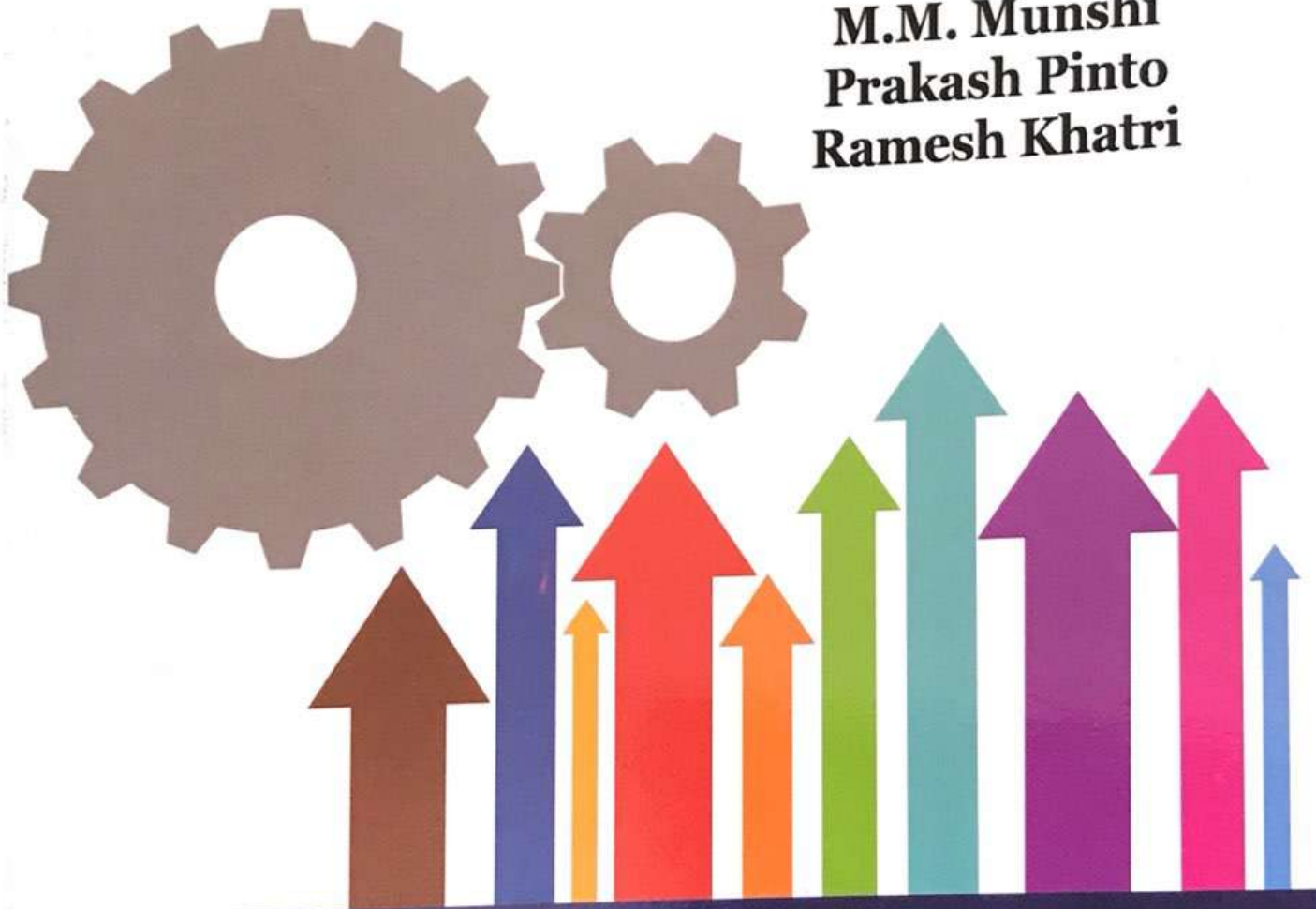
The hospitality sector is one of the major service oriented industries that concentrates on career planning and development of its employees. The present study tries to understand the outlook of the employees towards the career planning and development at Vivanta by Taj. Extent of organizational support on career planning and development was analysed by taking the opinion of the employees. Influence of employee's experience, qualification, age and gender was also analysed. Vivanta by Taj has enabled the employees to recognize the career opportunities existing in the organization. It goes without saying that awareness of career planning and development within the organization helps in boosting employee morale and productivity.

Key Words: *Career Planning, Development, Hospitality, Morale, Productivity, Organizational Support*

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Influence of Gender and Age on the Effectiveness of Talent Management in Mangalore Chemical Fertilizers (MCF)

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Abstract

Organisations are constantly seeking new ways of improving workforce productivity for which they are focusing on maximizing

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Application of Health Literacy Tools to Understand the Status of Health Literacy

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Abstract

Health is one of the most important elements of human development and growth. People with better awareness about their health are able to maintain a good health trajectory throughout. People with limited health literacy are more likely to make medication errors, and they have less health knowledge, worse health status, more hospitalisations, and higher healthcare costs than people with adequate literacy. An earnest effort is made to understand the health literacy levels of literate adults review the health literacy position among literate adults who are able to read and understand English in urban and rural Mangaluru with the help of REALM-Teen, REALM-SF, REALM-R and NVS health literacy tools. Health literacy scores observed among the respondents in this study were very poor. It means that most people would struggle to understand different healthcare information. By improving peoples access to health information, and their capacity to use it effectively, health literacy can be improved. More interactions must take place between the healthcare workers, doctors, nurses and the general public so as to increase the awareness regarding the health in the society.

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Intricacies of connection between incentives and employee productivity

Ganesh Anjali

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Online published on 21 January, 2019.

Abstract

Both financial and non-financial incentives play a major role in influencing the productivity of the employees as they act as strong motivators for the people to work and aspire for higher productivity. The study intends to find out the financial and non-financial incentives awarded to employees at Mangalore Catholic Cooperative Bank Limited (MCC Bank Ltd.), which will have an influence on

Leveraging E-Learning through Google Classroom: A Usability Study

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Abstract: In the modern day and age, technology is very much ubiquitous, in other words it is anywhere and everywhere. The most interesting aspect of this trend is that the educational systems are adapting to technology at a rapid pace. This is increasingly assisting the careers of students as well as the teacher. The technology which is most often right on the fingertips, keeps everything and everyone updated while the rest is getting outdated. Classroom teaching can do wonders with the implementation and usage of technology since the modern world is in need of it. The current trend is to learn online, where almost everything is available on the screen right in front of the learner. These E-Learning techniques are epitomized in Google Suite for Education which offers a plethora of opportunities for the learners to explore various options in front of them to leverage E-Learning. A study has been carried out to assess the effectiveness of assignments when submitted manually to the teachers as opposed to submission through an E-Learning facility like Google Classroom and the results show overwhelming success when this activity was carried out with the help of technology. This paper discusses incorporating technology in classroom learning, diverse ways of leveraging it in the classroom, its benefits and a number of relevant issues.

Keywords: E-Learning, Education, Cloud Computing, Google Suite for Education, Google Classroom

1. Introduction

The traditional classroom cannot compare to most modern technology-enabled classrooms because the intensity of the knowledge acquired is much more. The teacher teaches and clarifies any doubts related to the particular topic, giving real-world examples in an attempt to do so. Also, the same concept is presented in many different ways in a technology-enabled classroom, so that the learners with varied pace and needs, get to absorb the concepts taught learn over a period of time. Of-late, the curriculum is increasing due to the industry standards and requirements which cannot be covered within the given schedule for the academics. To solve these inherent problems and also to give a boost to the traditional educational strategies, there have been a lot of emerging technologies which go hand-in-hand.

E-Learning is the buzzword in modern times which has given a new shape to the traditional classroom learning. Cloud Computing forms the base for these E-Learning [1] techniques wherein teacher [2] as well as students can collaborate from their comfort zone and experience learning [3] in a creative way. With E-Learning techniques, the learners are encouraged to get knowledge at their own pace and

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space. There are a variety of E-Learning tools [4] out there and one prominent one among them is the Google Suite for Education [5]. It may be seen as a collaborative solution for the needs of both a teacher and a student [6, 7].

Google Suite for Education includes Google App tools like Drive, Gmail and Docs [8], Forms, Sheets and Slides that can be collaborated with apps like Google Classroom and YouTube which provide a vast variety of knowledge and information for students and teachers alike. A teacher can create a Google Classroom for any particular subject comprising of all the students belonging to that class and can also include more teacher for the same subject, which helps the learners to gain additional ideas on the same topic from multiple teachers as well as online resources too for further sustenance. The topics to be covered, the reference materials may be intimated to students well in advance so that students can come well prepared for the topic that can add more interaction in the overall learning. The students get notification to their emails, devices installed with the same app whenever an activity is initiated in the Google Classroom, like posting any announcements, assignments, etc by the facilitator, when a learner of the class asks any doubts related to any particular topic, or even when they start a new discussion. In addition to this, Google Classroom fits perfectly into the category of flipped classrooms [9] which are becoming increasingly popular.

There is a lot of scope for having such technology embedded in our education system since most of educational institutions and universities are getting benefited out of E-Learning. So the best use of all these approaches can be achieved by using an appropriate tool that can be accessed and free for everyone following the Educational Social Responsibility.

This paper focuses on a study which is based on the implementation of Google Suite for Education to a set of students and another set with the conventional teaching pedagogies.

2. Literature Review

A. E-Learning

Elizabeth et al [10] describe the usage of network technology to deliver training as the revolution in the field of E-Learning and takes on a practitioners

approach to asses of E-Learning, look into its drawback and the challenges in this field. Zhang et al [7] discuss the possibilities of E-Learning replacing classroom learning by assimilating suitable pedagogical methods, to enhance system interactivity and personalization and for the continuous engagement of the learners. Thavamalar Govindasamy [11] shows the pedagogical considerations in the successful implementation of E-Learning by stating that the pedagogy plays a very crucial role in the success or failure of this implementation. It is also found that understanding how learning takes place online can fix most of the issues associated with unsuccessful implementation of E-Learning. Tavangarian et al [12] point out the importance teachers in early E-Learning models and defines a flexible multidimensional data model which focuses on learners rather than teachers thereby influencing individual learning.

B. Cloud Computing

Sultan [1] brings out the need to incorporate Cloud Computing strategies in educational institutes to innovate and realize the true potential of techniques such as web services, virtualization and grid computing. The relevance of Cloud Computing becomes increasingly important as it is expected to offer flexibility and pay as you go cost structure.

C. Google Suite for Education

Herrick [5] describes the usage of Google Apps for collaboration by stating the successful migration that took place at Colorado State University which provides a lot of advantages to all the stakeholders of the university. Railean [13] provides an overview of opportunities offered by Google Apps by covering both theory and practicalities of the apps and the advantages in terms of competency development. Hocutt [14] developed a usability study which examines the perceptions of student community and assesses the usability of Google Apps for Education. It is observed that the students find Google Apps relatively easy while widely appreciating its collaborative affordances. Blau and Caspi [15] experimented to test the differences between sharing and collaborating using various tools which included Google Docs and the implications show that collaboration is found to be superior to sharing among students. Lindh and Nolin [16] discuss the surveillance and privacy aspects in the implementation of Google Apps for Education and

conclude that even though there are a lot of advantages associated with its usage, it is found that the back end strategies are relatively hidden from the users of technology. A research study was conducted by Cahill [17] and an attempt was made to gauge the perception of university professors about the impact of integration of Google Apps in the daily activities of the universities. The results show that the professors are in favor of integrating Google Apps into their instructional strategies provided they are equipped with appropriate professional development and training.

D. Google Classroom

Iftakhar [18] describes the working of Google Classroom with the help of the data collected over a period of time and presents an analysis in terms of teachers and students perspectives. Based on these perspectives, some suggestions are discussed and it has been concluded that adaptation of new and upcoming technologies like virtual classroom is a must to impart quality education.

3. Methodology

Assessments are an integral form of education system and more so in engineering education. Assignments are one of the assessment techniques to gauge the learning and have proved to be a very effective tool in doing so. The study here is based on assignments handed over to students from one particular class and the results show the effectiveness of applying E-Learning technique in evaluation as opposed to the traditional manual way of submitting assignments.

A. Participants

The participants for this study were 31 second year, full time students from post graduate department in computer applications and two teachers of the same department.

B. Study Design

As a part of this study, the students were handed over two distinct assignments pertaining to two courses handled by the respective teachers. As a first phase of this study, one of the teacher members asked the students to submit the assignments in the traditional way wherein each student had to submit a handwritten assignment within the deadline specified

by the teacher. The second teacher, who had leveraged Google Classroom as a part of E-Learning, asked the students to submit the assignments through Google Classroom itself. In the second phase of this study the teacher leveraging Google Classroom, asked the students to submit yet another assignment pertaining to his subject.

C. Data Analysis

The analysis performed on the assignments submitted by students showed that the intrinsic problem with manual submissions is that the difficulty in understanding the handwriting of some of the candidates. Another more severe problem was to keep track of the late submissions and reduce the grades accordingly.

Fig 1 depicts the data collected when the submission was manual. The teacher had to personally keep track of the assignments submitted beyond the deadline and had to reduce the scores accordingly. The last date for the submission of this assignment was 30th September but some of the students exceeded this deadline and some of the submissions were made in the month of October. This becomes an additional burden on the teacher. One way to solve this issue was to reject the submissions beyond deadline but the general tendency of students is to submit the work just on the stroke of the deadline or a couple of days beyond the deadline.

Name	USN	Last Date	Date of Submission (Deadline: Sept-30)	Score	Penalty for not Submitting on time	Final Score
Student 1	15MCA01	30-Sep	17-Oct	9	3	6
Student 2	15MCA02	30-Sep	25-Sep	9	0	9
Student 3	15MCA03	30-Sep	30-Sep	5	0	5
Student 4	15MCA04	30-Sep	10-Oct	6	3	3
Student 5	15MCA05	30-Sep	17-Oct	7	3	4
Student 6	15MCA06	30-Sep	17-Oct	9	3	6
Student 7	15MCA07	30-Sep	10-Oct	9	3	6
Student 8	15MCA08	30-Sep	10-Oct	7	3	4
Student 9	15MCA09	30-Sep	30-Sep	6	0	6
Student 10	15MCA10	30-Sep	30-Oct	9	3	6
Student 11	15MCA11	30-Sep	18-Oct	6	3	3
Student 12	15MCA12	30-Sep	30-Oct	9	3	6
Student 13	15MCA13	30-Sep	30-Sep	6	0	6
Student 14	15MCA14	30-Sep	30-Sep	7	0	7
Student 15	15MCA15	30-Sep	30-Sep	7	0	7
Student 16	15MCA16	30-Sep	18-Oct	7	3	4
Student 17	15MCA17	30-Sep	10-Oct	6	3	3
Student 18	15MCA18	30-Sep	30-Oct	5	3	2

Fig. 1 Representation of data collected through the manual submission of assignments

Computer Networks				Sept 30	Oct 31	
Total Students : 31				Assignment 1	Assignment 2	
OPEN CLASSROOM				10	10	
Students Not Attended				14	1	
Class average				54.83%	3.7	7.27
Student 1	15MCA01	15MCA01@sjec.ac.in	75.0%	5	10	
Student 2	15MCA02	15MCA02@sjec.ac.in	75.0%	8	7	
Student 3	15MCA03	15MCA03@sjec.ac.in	40.0%	0	8	
Student 4	15MCA04	15MCA04@sjec.ac.in	55.0%	6	5	
Student 5	15MCA05	15MCA05@sjec.ac.in	40.0%	0	8	
Student 6	15MCA06	15MCA06@sjec.ac.in	25.0%	0	5	
Student 7	15MCA07	15MCA07@sjec.ac.in	40.0%	0	8	
Student 8	15MCA08	15MCA08@sjec.ac.in	75.0%	5	10	
Student 9	15MCA09	15MCA09@sjec.ac.in	65.0%	9	8	
Student 10	15MCA10	15MCA10@sjec.ac.in	55.0%	5	6	
Student 11	15MCA11	15MCA11@sjec.ac.in	30.0%	0	6	
Student 12	15MCA12	15MCA12@sjec.ac.in	60.0%	6	6	
Student 13	15MCA13	15MCA13@sjec.ac.in	25.0%	0	5	
Student 14	15MCA14	15MCA14@sjec.ac.in	75.0%	7	8	
Student 15	15MCA15	15MCA15@sjec.ac.in	75.0%	8	7	

Fig. 2 Representation of data collected for assignments submitted through Google Classroom

Both these issues were overcome with the other method where the students had to submit their assignments online through Google Classroom. This mode of submission not only cleared the issues with respect to handwriting, it also provided a mechanism by which the submissions beyond the deadline were automatically disabled as shown in Fig 2. This reduced the burden on the teacher of keeping track of the assignments submitted beyond the deadline. In this case, there were two assignments up for submission as depicted in the figure. The deadline for the submission of the first assignment was 30th September. The response to this was rather lame and there were 14 students who took it lightly and did not submit the work on time. This was mainly due to the fact that the students assumed that they could submit the assignments beyond deadline and the teacher would still accept it as they normally do in the case of manual submissions; little did they know that Google Classroom itself restricts all submissions beyond the deadline. It becomes easy for the teacher to keep track of all the submissions this way. As a result of it, the average score of the class (out of 10) was only 3.7 as many people lost out on the opportunity to even submit their assignment.

The same set of students were given yet another assignment which was to be submitted on 31st October and due to their previous experience, the

students became more serious and all but one submitted the assignment before the deadline. The average score of the class shot up to 7.27 as a result and overall, the teacher was able to manage as score of 54.83% over the course of both the assignments.

When this analysis was presented to the other teacher members of the department, they were of the opinion that even though the E-Learning tool is found to be very efficient, it can only be utilized to the fullest when the teacher and students are properly trained [17] to use the technology.

4. Results and Discussion

The graphs in Fig 3 and 4 demonstrate the assessment for the submissions made manually.

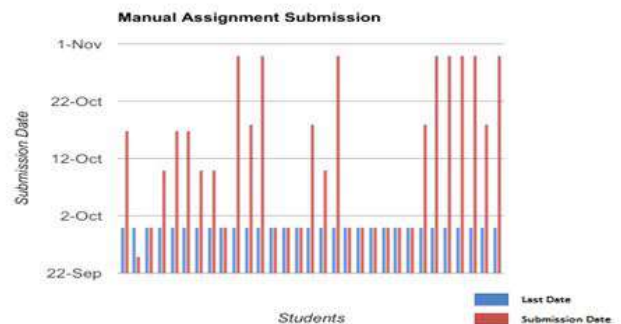


Fig. 3 Graphical representation of manual submissions

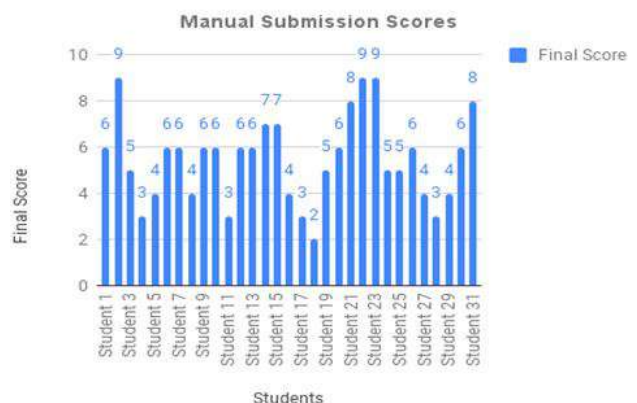


Fig. 4 Graphical representation of manual submissions showing performance assessment

The results shown in Fig 5, 6 and 7 present the statistics and graphs with respect to the submissions made through Google Classroom.

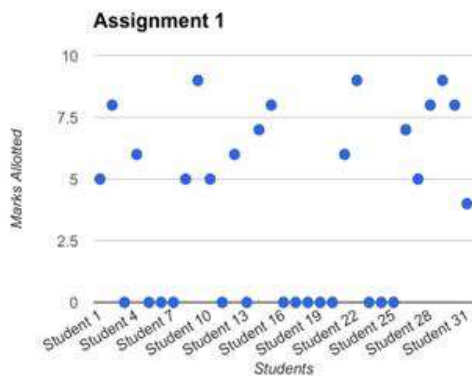


Fig. 5 Graphical representation of the first assignment submitted through Google Classroom

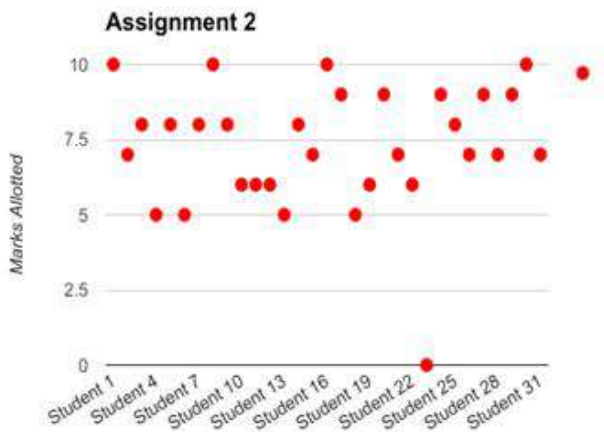


Fig. 6 Graphical representation of the second assignment submitted through Google Classroom

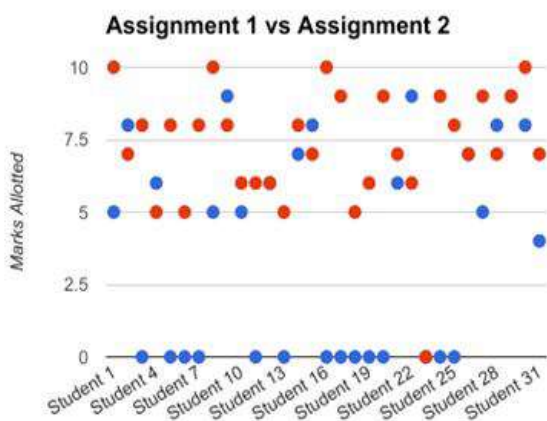


Fig. 7 Graphical comparison of both the assignments submitted through Google Classroom

The inherent problems with manual submissions are overcome by using Google Classroom as a tool for submission. The graphical representations depicted in

Fig 3 shows the graph derived from the data collected after the manual submission of assignments. The teacher in this case was handicapped with the limited options available to work with the data. The data collected by Google Classroom submissions, provide an efficient way to perform a number of operations on the data as shown in Fig 4, Fig 5 and Fig 6. A few of the options available to the teacher have been explored and depicted whereas Google Classroom provides numerous other ways to analyze the data.

At the end of the course, a survey was conducted to collect the feedback from the teachers as well as the learners to better understand their opinion on the use of this technology. Fig 8 shows a subset of the feedback collected. As seen, most of the participants of the survey have expressed the need to migrate from traditional ways to more sophisticated E-Learning tools. Along with the feedback, the stakeholders were also interviewed to analyse the impact of this pedagogy.

Department of Computer Applications St Joseph Engineering College, Mangalam 575 028 Feedback on Google Classroom Class: V Semester MCA Coordinator: Raghav Raju						
Sl No	Name	Role	Has you into the Google Classroom?	After using Google Classroom, do you prefer the traditional method or Google Classroom?	Which is the best thing you like in Google Classroom?	Suggestions/Opinions
1	Adhokar Bhramjit Singh	Faculty	8/10	Both	Drive repository	All departments should implement this
2	Prithi V Shet	Student	10/10	Google Classroom	Mobile App	No tension about searching documents during Xmas
3	Lalit Sai	Student	9/10	Google Classroom	Real time updates	-
4	Chaitan Rai	Student	10/10	Google Classroom	Google Classroom Mobile App	Nothing
5	Samarpan Purohit	Student	9/10	Google Classroom	Objective type questions	Youtube Videos in notes is superb :-)
6	Hareesh B	Faculty	9/10	Traditional Method	Tracking assignment	technology is good, but teaching learning process should happen in traditional method only.
7	Johnson D'Souza	Student	10/10	Google Classroom	Everything	No Comments

Fig. 8 Subset of feedback collected at the end of the course to assess the effectiveness of Google Classroom

One problem with E-Learning solutions is that if one of the students solves the assignment and share the document with his/her friends group, there are chances that entire group would use the same document for submission or make minimal changes to the document and submit the same. It becomes a major concern with this mode of submission as there will always be qualms with respect to the originality of the work done by the students in the preparation of the assignments. This concern can easily be overcome by applying plagiarism check on the assignments in order to find out the novelty of the work.

5. Conclusion

The study and the subsequent results clearly show that it is easy to keep track and assess the assignments

submitted through the E-Learning tool as opposed to the traditional manual way of submission. The assignments submitted through manual mode are prone to handwriting and violation of deadline issues, while the Google Classroom submissions seem to be impervious to these issues. One concern with this mode of submission is the qualms with respect to the originality of the work done by the students in the preparation of the assignments. This concern can easily be overcome by applying plagiarism check on the assignments in order to find out the novelty of the work. The teachers, as well as the students, who have taken part in this study express the need to migrate from traditional ways to more sophisticated E-Learning tools so as to improve the overall quality of learning. This study mainly focuses on the impact of the usage of Google Classroom as an E-Learning tool as opposed to the traditional methods of learning. The introduction of concepts like reward points for the work done could not only innovate teaching-learning process but can also intrinsically enhance the performance.

References

- [1] Sultan, Nabil. "Cloud computing for education: A new dawn?." *International Journal of Information Management* 30.2 (2010): 109-116.
- [2] Khmelevsky, Youry, and Volodymyr Voytenko. "Cloud computing infrastructure prototype for university education and research." *Proceedings of the 15th Western Canadian Conference on Computing Education*. ACM, 2010.
- [3] Thomas, P. Y. "Cloud computing: A potential paradigm for practising the scholarship of teaching and learning." *The Electronic Library* 29.2 (2011): 214-224.
- [4] Georgiev, Tsvetozar, Evgenia Georgieva, and Angel Smrikarov. "M-learning-a New Stage of E-Learning." *International conference on computer systems and technologies-CompSysTech*. Vol. 4.No. 28. 2004.
- [5] Herrick, Dan R. "Google this!: using Google apps for collaboration and productivity." *Proceedings of the 37th annual ACM SIGUCCS fall conference: communication and collaboration*. ACM, 2009.
- [6] Sun, Pei-Chen, et al. "What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction." *Computers & education* 50.4 (2008): 1183-1202.
- [7] Zhang, Dongsong, et al. "Can e-learning replace classroom learning?." *Communications of the ACM* 47.5 (2004): 75-79.
- [8] Saito, Tami. "Fostering Collaboration via Google Apps." (2014).
- [9] Ferreira, Jose Manuel Martins. "Flipped classrooms: From concept to reality using Google Apps." *Remote Engineering and Virtual Instrumentation (REV), 2014 11th International Conference on*. IEEE, 2014.
- [10] Welsh, Elizabeth T., et al. "E-learning: emerging uses, empirical results and future directions." *international Journal of Training and Development* 7.4 (2003): 245-258.
- [11] Govindasamy, Thavamalar. "Successful implementation of e-learning: Pedagogical considerations." *The internet and higher education* 4.3 (2001): 287-299.
- [12] Tavangarian, Djamshid, et al. "Is e-Learning the Solution for Individual Learning?." *Electronic Journal of E-learning* 2.2 (2004): 273-280.
- [13] Railean, Elena. "Google Apps for Education—a powerful solution for global scientific classrooms with learner centred environment." *International Journal of Computer Science Research and Application* 2.2 (2012): 19-27.
- [14] Brown, Maury Elizabeth, and Daniel L. Hocutt. "Learning to use, useful for learning: a usability study of Google apps for education." *Journal of Usability Studies* 10.4 (2015): 160-181.
- [15] Blau, Ina, and Avner Caspi. "What type of collaboration helps? Psychological ownership, perceived learning and outcome quality of collaboration using Google Docs." *Proceedings of the Chais conference on instructional technologies research*. Vol. 12. 2009.
- [16] Lindh, Maria, and Jan Nolin. "Information we collect: Surveillance and privacy in the implementation of Google Apps for Education." *European Educational Research Journal* 15.6 (2016): 644-663.

- [17] Cahill, Jacqueline L. "University professors' perceptions about the impact of integrating Google applications on students' communication and collaboration skills." *Journal of Research Initiatives* 1.2 (2014): 7.
- [18] Iftakhar, Shampa. "Google classroom: what works and how?." *Journal of Education and Social Sciences* 3 (2016): 12-18.



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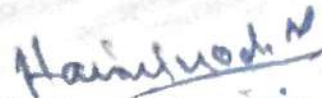
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Survey on Various Load Balancing Techniques in Cloud Computing

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Abstract Load Balancing is one of the most significant concepts in distributed environments. As Cloud Computing is considered to be one of the best platforms that gives storage of data at a minimal cost and is accessible all the time over the internet, load balancing for the cloud computing has turned into a very interesting and important study area. Load balancing aims at high user satisfaction and usage of resource ratio by guaranteeing a proficient and reasonable allocation of each computing resource. There are numerous difficulties in load balancing techniques such as security, fault tolerance etc which are prevalent in modern cloud computing environments. Many researchers have proposed several techniques to enhance load balancing and this paper too, portrays an overview on load balancing schemes in cloud environments. We explore the diverse types of algorithms that are proposed by a number of researchers to solve the problem of load balancing in cloud computing.

Keywords Cloud Computing, Load Balancing

1. Introduction

Cloud is the cluster of distributed computers that provides on-demand computational resources over a network. Cloud computing is becoming an advanced technology in recent years. It is conceptually distributed system where computing resources distributed through the network (Cloud) and services pooled together to provide the users on pay-as-needed basis.

Cloud Computing provides everything as a service and are deployed as public, private, community, and hybrid clouds. The three basic service layers of cloud computing are: Software as a Service (SaaS), where the user does not need to manage the installation and configuration of any hardware or software, such as Google Online office, Google Docs, Email cloud, etc; Platform as a Service (PaaS), where a service is a delivery of a computing platform over the web where users can create and install their own applications as they need. Configuration of computing platform and server is managed by the vendor or cloud provider. Example of PaaS is Google App Engine. Infrastructure as a Service (IaaS), where servers, software, and network equipment is provided as an on-demand service by the cloud provider [1].

The main function of sharing resources, software, information through the internet are the main interest in cloud computing with an aim to reduce capital and

operational cost, better performance in terms of response time and data processing time, maintain the system constancy and to accommodate future adaptation of the system. So there are various technical challenges that need to be addressed like Virtual Machine (VM) relocation, server consolidation, fault tolerance, high availability and scalability. But the central issue is the load balancing [2, 3]. It is the mechanism of spreading the load among various nodes of a distributed system to improve both resource deployment and job response time while also avoiding a situation where some of the nodes are having a huge amount of load while other nodes are doing nothing or idle with very little work. It also ensures that all the processor in the system or each node in the network does approximately the equal amount of work at any instant of time [4, 5].

The goal of load balancing is to improve the performance by balancing the load among the various resources (network links, central processing units, disk drives, etc.) to achieve optimal resource utilization, maximum throughput, maximum response time, and to avoid overload. Below Figure 1 shows the block diagram of cloud architecture [10].

2. Classification of Load Balancing Algorithms

Load balancing algorithms can be broadly classified into two types: Static algorithms and Dynamic algorithms. In Static Scheduling the assignment of tasks to processors is done before program execution begins i.e. in compile time. Scheduling decision is based on information about task execution times, processing resources, etc., which are

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assumed to be known at compile time [6]. Static scheduling methods are non-preemptive. The goal of static scheduling methods is to minimize the overall execution time. These algorithms cannot adapt to load changes during run-time [7].

Dynamic scheduling (often referred to as dynamic load balancing) is based on the redistribution of processes among the processors during execution time. This redistribution is performed by transferring tasks from the heavily loaded processors to the lightly loaded processors with the aim to improve the performance of the application. It is particularly useful when the requirement of process is not known a priori and the primary goal of the system is to maximize the utilization of resources. The major drawback of the dynamic load balancing scheme is the run-time overhead due to the transfer of load information among processors and decision-making for the selection of processes and processors for job transfers and the communication delays associated with the task relocation itself.

The dynamic load balancing algorithms can be centralized or distributed depending on whether the responsibility for the task of global dynamic scheduling should physically reside in a single processor (centralized) or the work involved in making decisions should be physically distributed among processors [8].

The most important feature of making decisions centrally is simplicity [6]. However, centralized algorithms suffer from the problem of the bottleneck and single point failure. Distributed load balancing algorithms are free from these problems. Again distributed dynamic scheduling can be cooperative or non-cooperative. The last one is simple where individual processors act alone as autonomous entities and

arrive at decisions regarding the use of their resources independent of the effect of their decision on the rest of the system. In the former one each processor has the responsibility to carry out its own portion of the scheduling task to achieve a common system wide goal [6, 8].

2.1. The Load Balancing Problem can be Divided into Two Sub Problems

1. Submission of new task for VM provisioning and placement of VMs on host.
2. Reallocation/migration of VMs. Different load balancing algorithms are there in the literature which are discussed below.

3. General Load Balancing Algorithms for Cloud Computing

3.1. Round Robin Algorithm

The algorithm works on random selection of the virtual machines. The data center controller assigns the requests to a list of VMs on a rotating basis. The first request is allocated to a VM picked randomly from the group and then the data center controller assigns the requests in a circular order. Once the VM assigns the request, the VM is moved to the end of the list [9]. The major issue in this allocation is this that it does not consider the advanced load balancing requirements such as processing times for each individual requests and if the VM is not free then incoming job should wait in the queue.

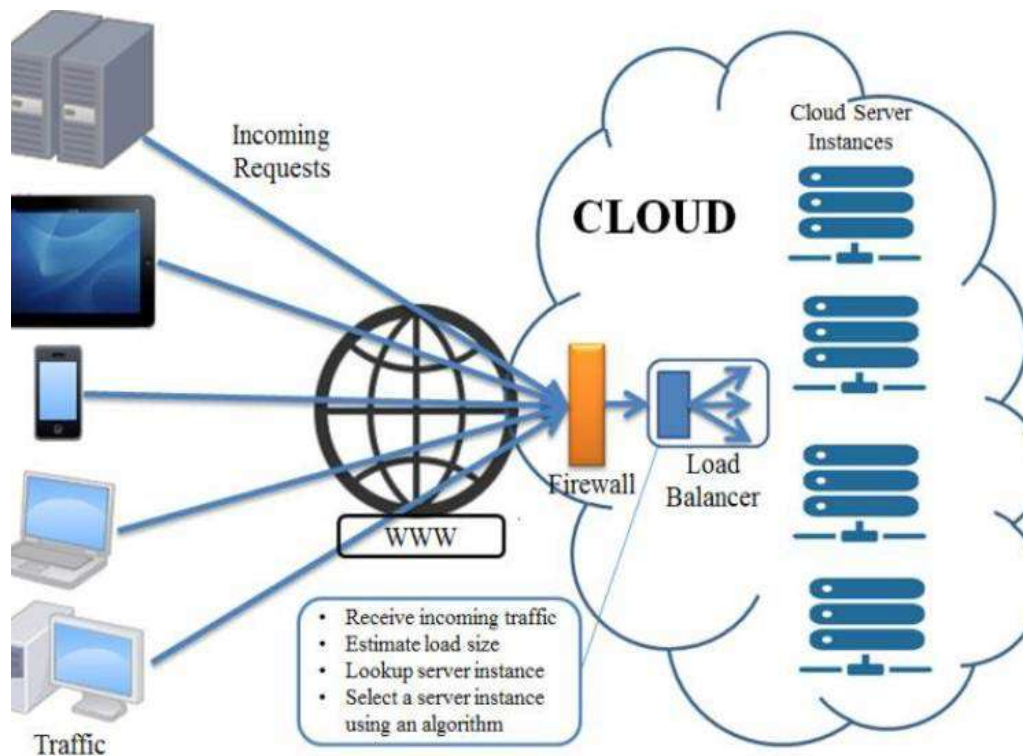


Figure 1. Block Diagram of Cloud Architecture

3.2. Throttled Load Balancing Algorithm (TLB)

In this algorithm the load balancer maintains an index table of virtual machines as well as their states (available or busy). The client/server first makes a request to data center to find a suitable virtual machine (VM) to perform the recommended job. The data center queries the load balancer for allocation of the VM. The load balancer scans the index table from the top until the first available VM is found or the index table is scanned fully. If the VM is found, the VM id is sent to the data center. The data center communicates the request to the VM identified by the id. Further, the data center acknowledges the load balancer of the new allocation and the data center revises the index table accordingly. During processing the request of the client, if appropriate VM is not found, the load balancer returns -1 to the data center [10, 11].

3.3. Modified Throttled

Like the Throttled algorithm, it also maintains an index table containing a list of virtual machines and their states. The first VM is selected in the same way as in Throttled. When the next request arrives, the VM at index next to already assigned VM is chosen depending on the state of the VM and the usual steps are followed, unlikely of the Throttled algorithm, where the index table is parsed from the first index every time the Data Center Queries Load Balancer for allocation of VM [12]. It gives better response time compare to the previous one. But in index table the state of some VM may change during the allocation of next request due to deallocation of some tasks. So it is not always beneficial to start searching from the next to already assigned VM.

3.4. Min-Min Scheduling Algorithm

It starts with a set of tasks. Then the resource which has the minimum completion time for all tasks is found. Next, the task with the minimum size is selected and assigned to the corresponding resource (hence the name Min-Min). Finally, the task is removed from set and the same procedure is repeated by Min-Min until all tasks are assigned. The method is simple, but it does not consider the existing load on a resource before assigning a task. So proper load balance is not achieved [13].

3.5. Load Balance Min-Min (LBMM)

This method uses Min-Min Scheduling algorithm as its base. It uses a three level hierarchical framework. Request manager which is in the first level of the architecture is responsible for receiving the task and assigning it to one service manager in the second level of LBMM. After receiving the request, service manager divides it into subtasks to speed up the processing. Then the service manager assigns the subtask to a service node for execution based on different attributes such as the remaining CPU space (node availability), remaining memory and the

transmission rate. This algorithm improves the load unbalance of Min-Min and minimizes the execution time of each node, but does not specify how to select a node for a complicated task requiring large-scale computation [14].

3.6. Load Balance Improved Min-Min Scheduling Algorithm (LBIMM)

It starts by executing Min-Min algorithm at the first step. At the second step it chooses the smallest size task from the heaviest loaded resource and calculates the completion time for that task on all other resources. Then the minimum completion time of that task is compared with the makespan produced by Min-Min. If it is less than makespan then the task is reassigned to the resource that produces it, and the ready time of both resources are updated. The process repeats until no other resources can produce less completion time for the smallest task on the heavily loaded resource than the makespan. Thus the overloaded resources are freed and the under loaded or idle resources are more utilized. This makes LBIMM to produce a schedule which improves load balancing and also reduces the overall completion time. But still it does not consider priority of a job while scheduling [13].

3.7. User-Priority Aware Load Balance Improved Min-Min Scheduling Algorithm (PA-LBIMM)

User priority is incorporated with the LBIMM algorithm to develop PA-LBIMM. This algorithm will first divide all the tasks into two groups G1 and G2. G1 is for the VIP users' tasks having higher priority requirement. G2 is for the ordinary users' tasks. The higher priority tasks in G1 are scheduled first using the Min-Min algorithm to assign the tasks to the VIP qualified resources set. Then the tasks with lower priority are scheduled to assign them to all the resources by Min-Min algorithm. At the end, the load balancing function is processed to optimize the load of all resources to produce the final schedule. The algorithm is only concerned with the makespan, load balancing and user-priority. It does not consider the deadline of each task [13].

3.8. Cooperative Scheduling Anti-load Balancing Algorithm for Cloud (CSAAC)

Thiam et al [14] presented a decentralized dynamic scheduling approach entitled Cooperative Scheduling Anti-load balancing Algorithm for Cloud (CSAAC). CASA proposed algorithm adopts the promised job response time as the only criterion to evaluate the nodes capabilities. CSAAC adds load of node as another criterion to evaluate the nodes capabilities. Each responder node computes an estimated completion time, resource status, necessary energy, and also current load and delivers the information by means of an ACCEPT message. The node selected based on several parameters, such as the promised time to complete, energy consumed, the node load between under-load threshold and

over-load threshold, node weight due to historical interaction records, etc. Selection policies take into account migration cost. The selected host was the one with the minimum energy consumed with best execution time, considered as migration cost to reduce the load of an overloaded host; it begins to migrate the slowest task. Selection policy will choose the task that will stay the longest on the host. Policy of localization will then identify the host that will receive the task without exceeding its capacities.

3.9. Load Balancing Strategy of Cloud Computing based on Artificial Bee Algorithm

J. Yao and J. H. [15] proposed an Artificial Bee Colony algorithm (ABC) based on the characteristics and requirements of cloud computing environments. Hundreds of thousands of simultaneous requests with the same type queued in the same server for the original ABC algorithm. Consequently, the local resource-intensive phenomenon raised and deteriorated load balancing. Due to the failure of this mechanism for the above case, an improved ABC is proposed. By replacing other types of requests with the next served request, the type of request is changed. It ended the accumulation of request and improved the system throughput. Experimental results show that ABC algorithm-based load balancing mechanism is applause for its stability and the improved ABC does well in the scalability.

3.10. Two-Phase Load Balancing Algorithm

This algorithm is the combination of the OLB and LBMM to have a better execution time and to balance the load more efficiently. A queue is used to store tasks that need to be carried out by manager. In the first phase OLB scheduling manager is used to assign job to the service manager. In the second phase LBMM algorithm is used to choose the suitable service node to execute the subtask by the service manager. The problem associated with this approach is that it is applicable only in static environment [16].

3.11. Adaptive Distributed Load Balancing Algorithm based on Live Migration of Virtual Machines in Cloud

R. Achar et al [17] proposed Distributed intra cloud load balancing algorithm to compare and balance based on sampling to reach equilibrium solution. The algorithm was executed concurrently on each host. Cost of running VM on each of the host was calculated and it assures that VM always migrates from pm with higher cost to those with lower one and larger was difference of costs, higher was migrated probability of VM's.

3.12. Load Balancing with Availability Checker and Load Reporters (LB-ACLRs)

P. B. Soundarabai et al. [18] proposed the concept of software based load balancer along with

Availability-Checker and Load Reporters (LB-ACLRs) which reduces the overhead on server and the load balancer to improve performance in Distributed Systems. Motivated by the concept of CSMA Protocol Load Reporter stubs were deployed on each of the servers. This stub runs on the all server systems and provides current memory, CPU and network usage details to the Availability Checker at every time interval. Load Reporters (LRs) update the AC with all the load details from the various available servers which get stored in a hash table or database. Using this database, AC updates the main that was present in LB. LB was only responsible for selecting the available server based on the database information and redirecting the client requests to the next selected server. Only one TCP connection was required to update the servers' availability. So no multithreaded environment was used to collect the servers' load and availability details every time.

4. Cost Effective Load Balancing Algorithms for Cloud Computing

4.1. Load Balancing with Optimal Cost Scheduling Algorithm

Amanpreet Chawla and Navtej Singh Ghuman [19] used Round Robin algorithm to schedule incoming tasks and optimizes the cost and schedules the resources based on the cost. In the proposed algorithm resources were grouped as packages in each VM. When the user requests for the resource the VM consisting of that package was executed. This technique brings down the execution cost of the service provider.

4.2. Cost Effective Load Balanced Resource Allocation for Partitioned Cloud System

M. R. Sumalatha et al [20] proposed DBPS (Deadline Based Pre-emptive Scheduling) and a TLBC (Throttled Load Balancing for Cloud) load balancing model based on cloud partitioning using virtual machine. Once a task was submitted to the cloud server, it was divided into several sub tasks. The workload of the task was compared with the training set collected from various virtual machines and also the relative deadline of that task was predicted using samples.

These tasks were assigned to the Task Manager and Deadline Based Priority Scheduling was applied on the task set. The scheduled task set was given to the main controller which performs load balancing. The main controller maintains a status table where the status of all the nodes is stored. The task with higher priority in the scheduled list was submitted to the node with the exact amount of resources available for the task.

The node controller again checks the status of the Virtual Machine and submits the task to the virtual machine with appropriate CPU and I/O dimensions and then the tasks were

executed. Reduction of Execution time and execution cost was demonstrated.

4.3. Power Aware Load Balancing for Cloud Computing

J. M. Galloway et al [21] first gathers the utilization percentage of each active compute node. In the case that all compute nodes were above 75% utilization, PALB instantiates a new virtual machine on the compute node with the lowest utilization number. Otherwise, the new Virtual Machine (VM) was booted on the compute node with the highest utilization (if it can accommodate the size of the VM).

4.4. The Load Balancing based on the Estimated Finish Time of Tasks in Cloud Computing

Y. Fahim et al [22] proposed a new improvement of the load balancing by the algorithm “estimated finish time load balancer”, that takes into account, the current load of the virtual machine of a data center and the estimation of the processing finish time of a task before any allocation, in order to overcome the problems caused by the static algorithms. The algorithm allows cloud service providers, to improve the performance, availability and maximize the use of virtual machines in their data centers.

4.5. Load Balancing Strategy for Optimal Peak Hour Performance in Cloud Datacenters

A. K. Kulkarni and B. Annappa [23] proposed a VM load balancing algorithm that ensures uniform allocation of requests to Virtual machines even during peak hours when frequency of requests received in data center was very high to ensure faster response times to users was proposed.

4.6. Cloud Task Scheduling based on Load Balancing Ant Colony Optimization

K. Li et al [24] proposed a cloud task scheduling policy based on Load Balancing Ant Colony Optimization (LBACO) algorithm. The main contribution of their work was to balance the entire system load while trying to minimize the makespan of a given tasks set. The new scheduling strategy was simulated using the CloudSim toolkit package. Experiments results showed the proposed LBACO algorithm outperformed FCFS (First Come First Serve) and the basic ACO (Ant Colony Optimization).

4.7. Bee-MMT: A Load Balancing Method for Power Consumption Management in Cloud Computing

S. M. Ghafari et al [25] proposed a load balancing method called Bee-MMT (artificial bee colony algorithm-Minimal Migration Time), which using bee colony algorithm to detect over utilized hosts. Then with the MMT VM selection, selects one or more VMs to migrate from them to reduce their utilization. Meanwhile, it can find underutilized hosts and if it is possible, migrate all VMs which allocated to these hosts and then switch them to the sleep mode.

4.8. Task-Based System Load Balancing in Cloud Computing Using Particle Swarm Optimization

F. Ramezani et al [26] proposed a Task Based System Load Balancing method using Particle Swarm Optimization (TBSLBPSO) to achieve system load balancing by only transferring extra tasks from an overloaded VM instead of migrating the entire overloaded VM. Particle Swarm Optimization (PSO) optimization model was used to migrate the extra tasks to the new host VMs. It is shown that the TBSLB-PSO method significantly reduces the time taken for the load balancing process compared to traditional load balancing approaches and the overloaded VMs are not paused during the migration process, and there was no need to use the VM pre-copy process. It eliminated VM downtime and the risk of losing the last activity performed by a customer, and increased the Quality of Service experienced by cloud customers.

5. Cluster Based Load Balancing Algorithms for Cloud Computing

5.1. A Cluster-Based Load Balancing Algorithm in Cloud Computing

S. K. Dhurandher [27] proposed cluster based load balancing algorithm for cloud computing. The network was divided into clusters. Every cluster had at least one Inter Cluster Communication (ICC) node. A Slave was the computing element of the network. Every slave was connected to exactly one master directly. The slave periodically updates its master with the most recent values of the storage, bandwidth, processing. The master node maintains a table of load distribution among slaves. Each entry of the table describes the load on the respective slave.

5.2. Proposed Load Balancing Algorithm is Divided into Two Parts

- 1) Load distribution among masters and
- 2) Load distribution from master to slave

5.2.1. Load Distribution among Masters Based on

- a. On receiving the task, the master calculates a parameter called performance factor, which indicates the ability of the master to perform a specific task.
- b. Based on performance factor task is executed within the cluster or broadcasted to be executed by suitable cluster.

5.2.2. Load Distribution from Master to Slave is done with RR Scheduling

For Cluster Based Load Balancing in Cloud Computing, S. Kapoor, and C. Dabas [27] proposed a Cluster based load balancing algorithm which considered resource specific demands of the tasks and reduced scanning overhead by dividing the machines into clusters. Further K-means

clustering approach was used to divide VMs into cluster. The algorithm is compared with the existing throttled and modified throttled algorithms and it is shown that the algorithm gives better results in terms of waiting time, execution time, turnaround time and throughput.

6. Conclusions

This has been an attempt to survey multiple algorithms and also to discuss about the different algorithms that exist for load balancing in cloud computing as well as metrics for the same. Load balancing is one of the most important aspects of cloud computing and is essential to distribute the extra dynamic local workload consistently to the entire node in the whole cloud to attain a high user satisfaction and resource utilization ratio. It also guarantees that every computing resource is distributed efficiently and fairly. A vast number of parameters and different types of soft computing techniques can be included in future for the better utilization and needs of the user. A comparison of several load balancing techniques has also been done here.

REFERENCES

- [1] A. Beloglazov, and R. Buyya, Energy efficient resource management in virtualized cloud data centers, Proc. 10th IEEE/ACM international conference on cluster, cloud and grid computing, 2010, 826-831.
- [2] Qi Zhang, Lu Cheng, and Raouf Boutaba, Cloud computing: state-of-the-art and research challenges, Journal of Internet Services and Applications, 1(1), 2010, 7-18.
- [3] Amandeep Kaur Sidhu, and Supriya Kinger, Analysis of Load Balancing Techniques in Cloud Computing, International Journal of Computers & Technology, 4(2), 2013, 737-741.
- [4] R. Mishra, and A. Jaiswal, Ant colony optimization: A solution of load balancing in cloud, International Journal of Web & Semantic Technology, 3(2), 2012, 33.
- [5] E. Caron, L. Rodero-Merino, F. Desprez, and A. Muresan, Auto-scaling, load balancing and monitoring in commercial and open-source clouds, 2012.
- [6] X. Evers, W. H. CSG, CR. B. SG, I. S. Herschberg, D. H. J. Epema, and J. F. C. M. de Jongh, A literature study on scheduling in distributed systems, Delft University of Technology, 1992.
- [7] K. A. Nuaimi, N. Mohamed, M. A. Nuaimi, and J. Al-Jaroodi, A survey of load balancing in cloud computing: Challenges and algorithms, Proc. 2012 Second Symposium on Network Cloud Computing and Applications (NCCA), 2012, 137-142.
- [8] Kuhl, A Taxonomy of Scheduling in General-Purpose Distributed Computing Systems, IEEE Trans, on Software Eng., 14(2), 1988, 141-154.
- [9] M. M. D. Shah, M. A. A. Kariyani, and M. D. L. Agrawal, Allocation of Virtual Machines In Cloud Computing Using Load Balancing Algorithm, IJCSITS, 2013, 2249-9555.
- [10] B. Wickremasinghe, CloudAnalyst: A CloudSim-based tool for modelling and analysis of large scale cloud computing environments, MEDC project report, 22(6), 2009, 433-659.
- [11] B. Wickremasinghe, R. N. Calheiros, and R. Buyya, Cloudanalyst: A cloudsim-based visual modeller for analysing cloud computing environments and applications, Proc. 24th IEEE International Conference on Advanced Information Networking and Applications (AINA), 2010, 446-452.
- [12] S. G. Domanal, and G. R. M. Reddy, Load Balancing in Cloud Computing using Modified Throttled Algorithm, Proc. IEEE International Conference on Cloud Computing in Emerging Markets (CEEM), 2013, 1-5.
- [13] Elian, and G. Akanmu, User-priority guided Min-Min scheduling algorithm for load balancing in cloud computing, Proc. National Conference on Parallel Computing Technologies (PARCOMPTECH), 2013, 1-8.
- [14] C. Thiam, G. da Costa, and J. M. Pierson, Cooperative Scheduling Anti-load Balancing Algorithm for Cloud: CSAAC, Proc. 5th International Conference on Cloud Computing Technology and Science (CloudCom), 2013, 433-438.
- [15] J. Yao, and J. H. He, Load balancing strategy of cloud computing based on artificial bee algorithm. Proc. 8th International Conference on Computing Technology and Information Management (ICCM), 2012, 185-189.
- [16] Shu-Ching Wang, Kuo-Qin Yan, Wen-Pin Liao, and Shun-Sheng Wang, Towards a Load Balancing in a Three-level Cloud Computing Network, Proc. 3rd International Conference on Computer Science and Information Technology (ICCSIT), 2010, 108-113.
- [17] R. Achar, P. S. Thilagam, N. Soans, P. V. Vikyath, S. Rao, and A. M. Vijeth, Load balancing in cloud based on live migration of virtual machines, Proc. Annual IEEEI India Conference (INDICON), 2013, 1-5.
- [18] P. B. Soundarabai, A. S. Rani, R. K. Sahai, J. Thriveni, K. R. Venugopal, and L. M. Patnalk, Load balancing with availability checker and load reporters (LB-ACLs) for improved performance in distributed systems, Proc. 2nd International Conference on Devices, Circuits and Systems (ICDCS), 2014, 1-5.
- [19] Amanpreet Chawla, and Navtej Singh Ghumman, Efficient Cost Scheduling algorithm with Load Balancing in a Cloud Computing Environment, International Journal of Innovative Research in Computer and Communication Engineering, 3(6), 2015.
- [20] M. R. Sumalatha, C. Selvakumar, T. Priya, R. T. Azariah, and P. M. Manohar, CLBC-Cost effective load balanced resource allocation for partitioned cloud system, Proc. International Conference on Recent Trends in Information Technology (ICRTIT), 2014, 1-5.
- [21] J. M. Galloway, K. L. Smith, and S. S. Vrbsky, Power aware load balancing for cloud computing, Proc. the World Congress on Engineering and Computer Science, 2011, 19-21.
- [22] Y. Fahim, E. Ben Lahmar, E. H. Labriji, and A. Eddaoui, The load balancing based on the estimated finish time of tasks in cloud computing, Proc. Second World Conference on Complex Systems (WCCS), 2014, 594-598.

- [23] A. K. Kulkarni, and B. Annappa, Load balancing strategy for optimal peak hour performance in cloud datacenters, Proc. International Conference on Signal Processing, Informatics, Communication and Energy Systems (SPICES), 2015, 1-5.
- [24] K. Li, G. Xu, G. Zhao, Y. Dong, and D. Wang, August. Cloud task scheduling based on load balancing ant colony optimization, Proc. Sixth Annual Chinagrid Conference (ChinaGrid), 2011, 3-9.
- [25] F. Ramezani, J. Lu, and F. K. Hussain, Task-based system load balancing in cloud computing using particle swarm optimization, International Journal of Parallel Programming, 42(5), 2014, 739-754.
- [26] S. K. Dhurandher, M. S. Obaidat, I. Woungang, P. Agarwal, A. Gupta, A. and P. Gupta, A cluster-based load balancing algorithm in cloud computing, Proc. IEEE International Conference on Communications (ICC), 2014, 2921-2925.
- [27] S. Kapoor, and C. Dabas, Cluster based load balancing in cloud computing, Proc. Eighth International Conference in Contemporary Computing (IC3), 2015, 76-81.

A Comparative Study of Various Scheduling Algorithms in Cloud Computing

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Abstract Cloud Computing is known for providing services to variety of users by with the aid of very large scalable and virtualized resources over the internet. Due to the recent innovative trends in this field, a number of scheduling algorithms have been developed in cloud computing which intend to decrease the cost of the services provided by the service provider in cloud computing environment. Most of the modern day researchers, attempt to construct job scheduling algorithms to increase the availability and performance of cloud services as the users have to pay for the available resources/services based on time. Considering all the above factors, scheduling plays a crucial role to maximize the utilization of resources in cloud computing environment. Through this paper, we are doing a comparative study of various scheduling algorithms and the related issues in cloud computing.

Keywords Cloud Computing, Scheduling, Algorithm

1. Introduction

Cloud computing is known as a provider of dynamic services using very large scalable and virtualized resources over the Internet. Various definitions and interpretations of “clouds” and / or “cloud computing” exist. With particular respect to the various usage scopes the term is employed to, we will try to give a representative (as opposed to complete) set of definitions as recommendation towards future usage in the cloud computing related research space. We try to capture an abstract term in a way that best represents the technological aspects and issues related to it. In its broadest form, we can define a 'cloud' is an elastic execution environment of resources involving multiple stakeholders and providing a metered service at multiple granularities for a specified level of quality of service. To be more specific, a cloud is a platform or infrastructure that enables execution of code (services, applications etc.), in a managed and elastic fashion, whereas “managed” means that reliability according to pre defined quality parameters is automatically ensured and “elastic” implies that the resources are put to use according to actual current requirements observing overarching requirement definitions – implicitly, elasticity includes both up- and downward scalability of resources and data, but also load-balancing of data throughput.

Job scheduling is one of the major activities performed in

all the computing environments. Cloud computing is one the upcoming latest technology which is developing drastically. To efficiently increase the working of cloud computing environments, job scheduling is one the tasks performed in order to gain maximum profit. The goal of scheduling algorithms in distributed systems is spreading the load on processors and maximizing their utilization while minimizing the total task execution time Job scheduling, one of the most famous optimization problems, plays a key role to improve flexible and reliable systems. The main purpose is to schedule jobs to the adaptable resources in accordance with adaptable time, which involves finding out a proper sequence in which jobs can be executed under transaction logic constraints. There are main two categories of scheduling algorithm. 1) Static scheduling algorithm and 2) Dynamic scheduling algorithm. Both have their own advantage and limitation. Dynamic scheduling algorithm has higher performance than static algorithm but has a lot of overhead compare to it.

2. Scheduling

There has been various types of scheduling algorithm exist in distributed computing system. Most of them can be applied in the cloud environment with suitable verifications. The main advantage of job scheduling algorithm is to achieve a high performance computing and the best system throughput. Traditional job scheduling algorithms are not able to provide scheduling in the cloud environments. According to a simple classification, job scheduling algorithms in cloud computing can be categorized into two

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main groups; Batch Mode Heuristic scheduling Algorithms (BMHA) and online mode heuristic algorithms. In BMHA, Jobs are queued and collected into a set when they arrive in the system. The scheduling algorithm will start after a fixed period of time. The main examples of BMHA based algorithms are; First Come First Served scheduling algorithm (FCFS), Round Robin scheduling algorithm (RR), Min–Min algorithm and Max–Min algorithm.

By On-line mode heuristic scheduling algorithm, Jobs are scheduled when they arrive in the system. Since the cloud environment is a heterogeneous system and the speed of each processor varies quickly, the on-line mode heuristic scheduling algorithms are more appropriate for a cloud environment. Most Fit Task scheduling algorithm is suitable example of On-line mode heuristic scheduling algorithm.

a. First Come First Serve Algorithm:

Job in the queue which comes first is served. This algorithm is simple and fast.

b. Round Robin Algorithm:

In the round robin scheduling, processes are dispatched in a FIFO manner but are given a limited amount of CPU time called a time-slice or a quantum. If a process does not complete before its CPU-time expires, the CPU is preempted and given to the next process waiting in a queue. The preempted process is then placed at the back of the ready list.

c. Min–Min Algorithm:

This algorithm chooses small tasks to be executed first, which in turn delays large tasks for long time.

d. Max–Min Algorithm:

This algorithm chooses large tasks to be executed first, which in turn delays small tasks for long time.

e. Most Fit Task Scheduling Algorithm:

In this algorithm task which fit best in queue are executed first. This algorithm has high failure ratio.

f. Priority Scheduling Algorithm:

The basic idea is straightforward: each process is assigned a priority, and priority is allowed to run. Equal-Priority processes are scheduled in FCFS order. The Shortest-Job-First (SJF) algorithm is a special case of general priority scheduling algorithm. An SJF algorithm is simply a priority algorithm where the priority is the inverse of the (predicted) next CPU burst. That is, the longer the CPU burst, the lower the priority and vice versa. Priority can be defined either internally or externally. Internally defined priorities use some measurable quantities or qualities to compute priority of a process.

2.1. Scheduling Process

Scheduling process in cloud can be generalized into three stages namely:

- Resource discovering and filtering: Data center Broker discovers the resources present in the network system and collects status information related to them.

- Resource selection: Target resource is selected based on certain parameters of task and resource. This is deciding stage.
- Task submission: Task is submitted to resource selected.

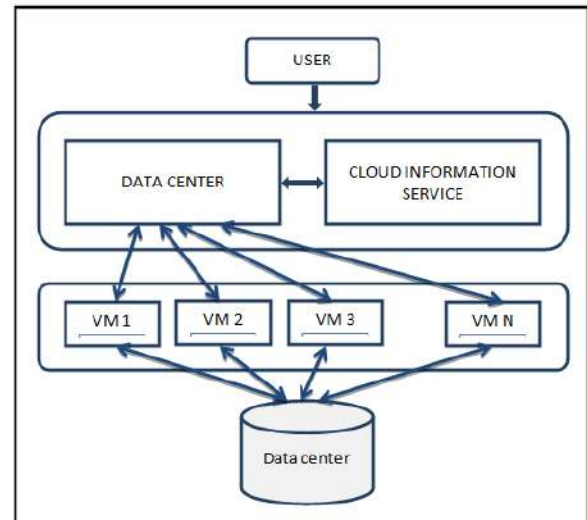


Figure 1. Scheduling Process

3. Existing Scheduling Algorithms

The following scheduling algorithms are currently prevalent in clouds.

3.1. Resource-Aware-Scheduling Algorithm (RASA)

Saeed Parsa and Reza Entezari-Maleki [1] proposed a new task scheduling algorithm RASA. It is composed of two traditional scheduling algorithms; Max-min and Min-min. RASA uses the advantages of Max-min and Min-min algorithms and covers their disadvantages. Though the deadline of each task, arriving rate of the tasks, cost of the task execution on each of the resource, cost of the communication are not considered. The experimental results show that RASA outperforms the existing scheduling algorithms in large scale distributed systems.

3.2. An Optimal Model for Priority based Service Scheduling Policy for Cloud Computing Environment

Dr. M. Dakshayini, Dr. H. S. Guruprasad [2] proposed a new scheduling algorithm based on priority and admission control scheme. In this algorithm priority is assigned to each admitted queue. Admission of each queue is decided by calculating tolerable delay and service cost. Advantage of this algorithm is that this policy with the proposed cloud architecture has achieved very high (99%) service completion rate with guaranteed QoS. As this policy provides the highest precedence for highly paid user service-requests, overall servicing cost for the cloud also increases.

3.3. Extended Max-Min Scheduling Using Petri Net and Load Balancing

El-Sayed T. El-kenawy, Ali Ibraheem El-Desoky, Mohamed F. Al-rahmawy [3] has proposed a new algorithm based on impact of RASA algorithm. Improved Max-min algorithm is based on the expected execution time instead of complete time as a selection basis. Petri nets are used to model the concurrent behaviour of distributed systems. Max-min demonstrates achieving schedules with comparable lower makespan rather than RASA and original Max-min.

3.4. Reliable Scheduling Distributed in Cloud computing (RSDC)

Arash Ghorbannia Delavar, Mahdi Javanmard, Mehrdad Barzegar Shabestari and Marjan Khosravi Talebi [4] proposed a reliable scheduling algorithm in cloud computing environment. In this algorithm, major job is divided to sub jobs. In order to balance the jobs the request and acknowledge time are calculated separately. The scheduling of each job is done by calculating the request and acknowledges time in the form of a shared job. So that efficiency of the system is increased.

3.5. Improved Cost-Based Algorithm for Task Scheduling

Mrs. S.Selvarani, Dr. G. Sudha Sadhasivam [5] proposed an improved cost-based scheduling algorithm for making efficient mapping of tasks to available resources in cloud. The improvisation of traditional activity based costing is proposed by new task scheduling strategy for cloud environment where there may be no relation between the overhead application base and the way that different tasks cause overhead cost of resources in cloud. This scheduling algorithm divides all user tasks depending on priority of each task into three different lists. This scheduling algorithm measures both resource cost and computation performance, it also Improves the computation/communication ratio.

3.6. An Optimistic Differentiated Job Scheduling System for Cloud Computing

Shalmali Ambike, Dipti Bhansali, Jae Kshirsagar, Juhi Bansiwala [6] has proposed a differentiated scheduling algorithm with non-preemptive priority queuing model for activities performed by cloud user in the cloud computing environment. In this approach one web application is created to do some activity like one of the file uploading and downloading then there is need of efficient job scheduling algorithm. The Qos requirements of the cloud computing user and the maximum profits of the cloud computing service provider are achieved with this algorithm.

3.7. A Priority based Job Scheduling Algorithm in Cloud Computing

Shamsollah Ghanbari, Mohamed Othman proposed a new scheduling algorithm based on multi-criteria and multi-decision priority driven scheduling algorithm [7]. This scheduling algorithm consist of three level of scheduling: object level, attribute level and alternate level. In this algorithm priority can be set by job resource ratio. Then priority vector can be compared with each queue. This algorithm has higher throughput and less finish time.

3.8. Performance and Cost Evaluation of Gang Scheduling in a Cloud Computing System with Job Migrations and Starvation Handling

Ioannis A. Moschakis and Helen D. Karatza has proposed a gang scheduling algorithm with job migration and starvation handling in which scheduling parallel jobs, already applied in the areas of Grid and Cluster computing. The number of Virtual Machines (VMs) available at any moment is dynamic and scales according to the demands of the jobs being serviced. The aforementioned model is studied through simulation in order to analyze the performance and overall cost of Gang Scheduling with migrations and starvation handling. Results highlight that this scheduling strategy can be effectively deployed on Clouds, and that cloud platforms can be viable for HPC or high performance enterprise applications.

4. Comparison

Sl. No.	Scheduling Algorithm	Scheduling Method	Scheduling Parameter	Scheduling Factor	Findings	Environment
1	Resource Aware Scheduling Algorithm (RASA)	Batch mode	Makespan	Grouped task	1. It is used to Reduce makespan	Grid Environment
2	An optimal model for priority based Service scheduling Policy for cloud Computing environment	Batch mode	Quality of Service, service request time	An array of workflow instances	1. High Quality of Service 2. High Throughput	Cloud Environment
3	Extended Max-Min Scheduling using Petri net and Load Balancing	Batch mode	Load balancing, finish time	Grouped task	1. It Is used for Efficient load Balancing 2. Petri net is used to remove limitation of Max-Min algorithm	Cloud Environment
4	Reliable Scheduling Distributed in Cloud computing (RSDC)	Batch mode	Processing time	Grouped task	1. It is used to reduce processing time 2. It is efficient for load balancing	Cloud Environment
5	Improved Cost-based Algorithm for Task Scheduling	Batch mode	Cost and performance	Unscheduled task group	1. Measures both resource cost and computation performance 2. Improves the computation /communication ratio	Cloud Environment
6	An Optimistic Differentiated Job Scheduling System for Cloud Computing	Dependency mode	Quality of Service, maximum profit	Single job with multiple user	The QoS requirements of the cloud computing user and the maximum profits of the cloud computing service provider are achieved	Cloud Environment
7	A Priority based Job Scheduling Algorithm in Cloud Computing	Dependency mode	Priority to each queue	An array of job queue	1. Less finish time	Cloud Environment
8	Performance and Cost Evaluation of Gang Scheduling in Cloud Computing System with Job Migrations and Starvation Handling	Batch mode	Performance and cost	Workflow with large number of jobs	1. The application of migrations and starvation handling had a significant effect on the model 2. It improves performance	Cloud Environment

5. Conclusions

Scheduling is considered as one of the most important tasks in cloud computing environment. In this paper, we have analyzed a number of scheduling algorithms and also tabulated the associated parameters. It has been noticed that

disk space management is critical issue in virtual environment. Existing scheduling algorithms give high throughput and are cost effective but they do not consider reliability and availability. So there is a need for algorithms those improve availability and reliability in cloud computing environment.

REFERENCES

- [1] Saeed Parsa and Reza Entezari-Maleki, "RASA: A New Task Scheduling Algorithm in Grid Environment" in *World Applied Sciences Journal 7 (Special Issue of Computer & IT)*: 152-160, 2009. Berry M. W., Dumais S. T., O'Brien G. W. Using linear algebra for intelligent information retrieval, *SIAM Review*, 1995, 37, pp. 573-595.
- [2] Dr. M. Dakshayini, Dr. H. S. Guruprasad "An Optimal Model for Priority based Service Scheduling Policy for Cloud Computing Environment" *International Journal of Computer Applications (0975 – 8887) Volume 32–No.9, October 2011.*
- [3] El-Sayed T. El-kenawy, Ali Ibraheem El-Desoky, Mohamed F. Al-rahamawy "Extended Max-Min Scheduling Using Petri Net and Load Balancing" *International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-2, Issue-4, September 2012.*
- [4] Arash Ghorbannia Delavar, Mahdi Javanmard, Mehrdad Barzegar Shabestari and Marjan Khosravi Talebi "RSDC (Reliable Scheduling Cloud environment Cloud environment Cloud environment Distributed In Cloud Computing)" in *International Journal of Computer Science, Engineering and Applications (IJCSEA) Vol.2, No.3, June 2012.*
- [5] Mrs. S. Selvarani; Dr. G. Sudha Sadhasivam, improved cost-based algorithm for task scheduling in Cloud computing, *IEEE 2010.*
- [6] Shalmali Ambike, Dipti Bhansali, Jae Kshirsagar, Juhi Bansiwala "An Optimistic Differentiated Job Scheduling System for Cloud Computing" *International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622 www.ijera.com Vol. 2, Issue 2, Mar-Apr 2012, pp.1212-1214.*
- [7] Shamsollah Ghanbari, Mohamed Othman "A Priority based Job Scheduling Algorithm in Cloud Computing" *International Conference on Advances Science and Contemporary Engineering 2012 (ICASCE 2012).*



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Ascertaining Anxiety in Social Media

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Abstract—Human health is mainly determined by the psychological well-being of an individual. Anxiety plays a major role in human health. We need proactively identify and resolve stress, and its related consequences that follow, in human beings. Today with the trending technology, social media is growing at a fast pace. Individuals are sharing majority of their life stories through it. They tend to express happiness, sadness, joy or grief through it. Thus these data can enable us to identify their stress levels, and suggest appropriate actions to overcome it. Lifestyle changes are majorly affected by the social media emergence. Based on the social interactions of people on social networks we mainly extract the attributes, features and identify the level of stress that the user is facing.

Keywords—Stress recognition, graph Scheme, blogging sites, social network, social interaction.

I. INTRODUCTION

Anxiety has adverse effect on sensitive, psychosomatic, and social welfare of every individual. It traces how we are thinking, feeling, and acting accordingly. In our life, practice of mental health problems, can affect his or her thinking, mood, and behaviour. Objective of our work is to alert people if they are under stress through an email including the percentage of stress by monitoring the word they use in their tweets. This gentle alert can help them to bring their anxiety level to acceptable level.

Lifestyle changes are majorly affected by the social media emergence. Today people like to share each and every moment of their life through social media. Based on the social interactions of people on social networks, the system mainly extracts the attributes, features and identifies the level of stress that the user is facing. Based on the percentage of stress we can take appropriate actions like informing the individual about their stress level through an e-mail.

A. Motivation

The emotional and psychological health of people is deteriorating as days pass. One of the reasons for this can be the influence of social media and the user interactions with it. Every other person is trying to compete with others on social media platforms. People have been so much involved in social media platforms, that they post most of their daily life happening on this platform, such that their friends can view and retweet it.

There is considerable significance to notice anxiety before it becomes severe problems. Conventional psychosomatic anxiety discovery is mostly based on counselling. Though, conventional approaches are certainly responsive, which are generally labour-consuming, time-costing and hysteric.

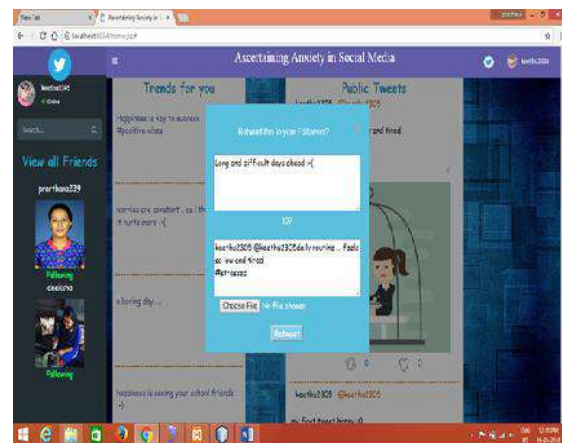


Fig 1: Sample tweets

B. Restrictions happen in news feed content based stress discovery

Primarily, in every micro blogs there are some constraint towards the number of words for tweets as the users must express meaningful and valuable ideas and thoughts within the limited maximum value otherwise all the feeds will be of less quality. This is the main reason for such limitation being in cooperated in all micro blogs. Two such micro blogs are Twitter and Sina Weibo, and blogger usually not express their prompt level of traumatic situations openly in their tweets. Furthermore, users with high psychosomatic pressure could unveil low vitality on social networks

C. Customers' social connections on social systems comprise beneficial indications for stress recognition

Two though-provoking interpretation have been made so far through social psychosomatic reconsiderations. The first is *mood contagion* [7]: a depraved mood that's keep moving from person to person during social communication.

The second is *linguistic echoes* [8]: in this persons are known to simulate the elegance of another person. These understandings impact us to expand the space of blogging wise examination by participating continuation social connections like remarks and retweeting actions in user's stress discovery procedure.

D. Our Work

Objective of our project is to in cooperate a system by which the stress level can be measured through social interaction conceding the post by various user.

First, we gather the user post and try to find out words in English related to stress. Based on this we categorized into different level which is already stored in database with the indication of appropriate level. Accordingly we report the degree of stress after some analysis process.

Various stress level categorized by the system is done through proper evaluation of the tweet and if the degree is very high or beyond limit then system intimate the advice to consult for the treatment.

II. LITERATURE SURVEY

After exhaustive literature survey we didn't find exact replica of our intended project but there some related work are listed in some studies and are listed below:

A. Mood Lens

Weibo a blogging application in china is analysing the emotion of the bloggers. This application is rename to "Mood Lens" and it has four level of emotion namely happy, sad, anger and disgust. It acknowledge the following:

- Co-relation of anger is higher degree than that of happiness in many of the blogger.
- Doubtful emotions has quicker transfer than that of happy and constructive emotions.

B. Feeling discovery in social systems

The psychological stress of blogger are more lasting, changing over with time if the instant emotion conveyed in a single blog. Latest study are focusing on blogger level emotion detection from the social network site [1][2][3][4].

C. Research on leveraging social interactions

Social network site plays major role social relations. Researcher are focusing on leveraging social interaction communication in order to improve the quality of social relation analysis [5]. Effectual cognitions are generated through the analysis of relation between blogger thinking and their behavior [6]. Leverage blogs on flicker also helps in predicting emotions through bit of image processing techniques. Our primary focus is on the content of the blogger well connected by blogging sites.

III. PROPOSED SYSTEM

Our system primary goal is on discovering the degree of stress based on the blogs from various sites. First we extract the appropriate attributes and structure from the tweet of each user then we intent to process according to the level of different stress level in order to categorized and to put into different level and to inform the user if recommendation of consultation is required based on the system.

A. Product Perspective

Our primary goal of the application is to detect the stress level from various social interaction. Classification of various attributes and user-level of stress are well define in the system and summarized using Image format to gather the degree of stress.

1. Features:

- User registration
- User can Tweet/follow
- Admin manages all the users of this platform. Admin gather data and sent give for processing
- store list of words suspected to be stressful or depict negative emotion
- Analysis is done with the comparison with the database and apply the rules for identifying the degree.
- Intimation to user if the level is extreme
- Details reports with graph chart

2. Assumptions and Dependencies:

- User must know fair computer knowledge
- Registration is must
- Active participation
- Originality of the tweet
- Tweet only in English
- Emoticons and images are not measured for identifying anxiety

IV. EXPERIMENTAL RESULTS

Detect stress for a user by selecting the date from where the tweets to be analysed.



Fig 2: Tweets by users

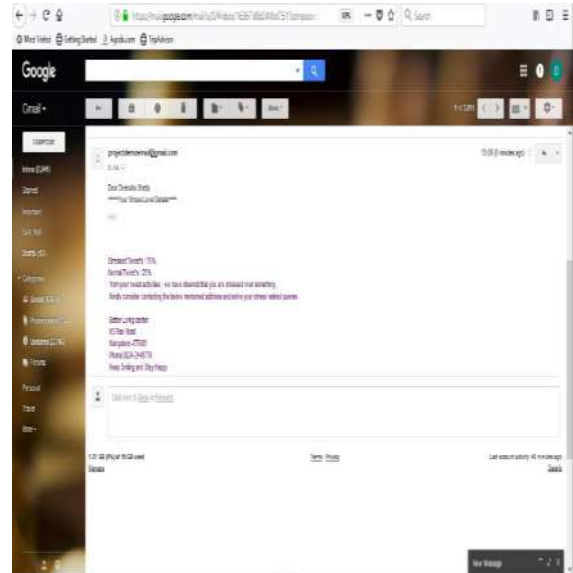


Fig 4: a) Mail sent to the user along with necessary details



Fig 3: Detect stress for a user by selecting the date from where the tweets to be analysed



Fig 4: b) Mail sent to the user with graph

V. CONCLUSION

Anxiety being a crucial factor in the overall health of a person should be determined and necessary actions should be taken at the earliest. People today are posting their daily life activities on social media and sharing it with their friends. Based on the social interactions of people on social networks we mainly extract the attributes, features and identify the level of stress that the user is facing. Thus this application can help to take proactive care to handle stress.

VI. FUTURE ENHANCEMENTS

The scope of this project is not limited to just detecting the stress level and taking necessary measures. There is much scope for future enhancements. Some enhancements (but not limited to) are specified below:

- More privacy can be provided to the user by making tweets private
- Detecting stress in our project is limited to just textual tweets, but in future it can be extended to detect stress based on Images, emotions etc.
- Detecting stress can be extended to tweets posted in other languages too ,other than English

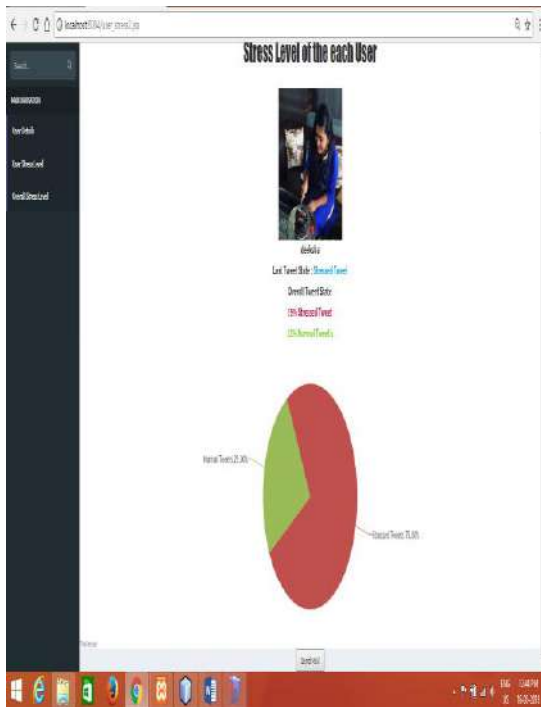


Fig 5: Graph displayed based on the percentage of stress



Fig 6: Overall stress graph of all users of the system

References

- [1] H. Lin, J. Jia, Q. Guo, Y. Xue, Q. Li, J. Huang, L. Cai, and L. Feng. User-level psychological stress detection from social media using deep neural network. In Proceedings of ACM Int. Conference on Multimedia, 2014.
- [2] Federico Alberto Pozzi, Daniele Maccagnola, Elisabetta Fersini, and Enza Messina. Enhance user-level sentiment analysis on microblogs with approval relations. In AI* IA 2013: Advances in Artificial Intelligence, pages 133–144.
- [3] Chenhao Tan, Lillian Lee, Jie Tang, Long Jiang, Ming Zhou, and Ping Li. User-level sentiment analysis incorporating social networks. In Proceedings of the SIGKDD international conference on Knowledge discovery and data mining, pages 1397–1405, 2011.
- [4] Shuo Zeng, Mingfeng Lin, and Hsinchun Chen. Dynamic userlevel affect analysis in social media: Modeling violence in the dark web. In IEEE International Conference on Intelligence and Security Informatics (ISI), pages 1–6, 2011.
- [5] Eileen Fischer and A. Rebecca Reuber. Social interaction via new social media: (how) can interactions on twitter affect effectual thinking and behavior? Journal of Business Venturing, 26(1):1–18, 2011.
- [6] Yang Yang, Jia Jia, Shumei Zhang, Boya Wu, Qicong Chen, Juanzi Li, Chunxiao Xing, and Jie Tang. How do your friends on social media disclose your emotions? In Proceedings of the 28th AAAI Conference on Artificial Intelligence (AAAI'14), pages 306–312, 2011.
- [7] Neumann R and Strack F. "mood contagion": the automatic transfer of mood between persons. Journal of Personality and Social Psychology, pages 211–223, 2000
- [8] Cristian Danescu niculescu mizil, Lillian Lee, Bo Pang, and Jon Kleinberg. Echoes of power: Language effects and power differences in social interaction. *Eprint arXiv: 1112.3670*, 2011

Bicycle Locking: Web based Mobile App

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Abstract- Nowadays parking system for bicycle has been a new train with the organization so that the staff of the organisation can effectively use the bicycle. People love to use bicycle because people are concern about their health at the same time risk are there for losing the cycle as it can be easily taken by theft. Security measures becomes one of the major concerns about the parking of bicycle. Bicycle locking system will ensure the security. It is a web based and mobile application app developed using ionic3. This system can easily track the bicycle, provide transaction record, booking and locking of it and many more. Secure login with OTP also made available and vendor can get all the result analysis from the system in order to improve or to put more service in some specific area.

Keywords- transactions, slot, vendor, payment, location, Bluetooth, security.

I. INTRODUCTION

This system "Bicycle Locking" is mobile and web based applications that has been developed using PHP, MYSQL and IONIC 3. Main purpose of the system is to secure the bicycle at the same time inventory management and all types of transaction will become easy on one click of button in this system. This system plays as an interface between the user and bicycle locking.

Our applications consist of three modules namely for user module, vender module and administrator module. End user has the capacity for reserving the cycle or on the spot but here the availability plays important role so getting the bicycle so many prefer to book in advance and user need not to worry about the theft of the bicycle as it is secure through locking and unlocking facilities. Administrator module the system and workflow of the system whenever any changes required in system and from this module all the functionality of the system can be monitored and do analysis. Our system support multiple language functionality so that it can be deployed around the globe. The foremost goal of the application is to provide an excellent security measure for the organisation to rely on and every customer need not worry at all anymore as it is secure.

II. LITERATURE SURVEY

Bicycle parking system is a new idea but many organisation have been working on this idea to get the maximum benefit by providing the most affordable transport service. Initially the issue was about the security measures of the bicycle. We have done thorough investigation and literature survey but could not get the exact replica of the system but many applications we came across where they provide provision only for the parking slot of the vehicle. One such application we came across is ParkZebra.

A. ParkZebra

ParkZebra application allows the user for booking a parking lot in the specific parking area designation by the system and they can do booking for two and four wheeler based on the slot available in the system and preference of the end user.

III. PROPOSED SYSTEM

Here we proposed a system in which end user directly can interact with the system itself provided they have an account that to through with secure logging using OTP technologies. If new user they need to registered into the system and should be a member of the system. End user can do booking of the slot by choosing from the available slot from the parking place. Pricing of the system is dynamic based on the uses time and distance of travel. Here administrator play an important role in adding deleting of the service etc., generating reports and many more.

A. Product Perspective

Bicycle locking is an application which is developed using ionic3 and PHP and all the data will be store in the data store using MYSQL at the server. This applications allow user for booking bicycle as well the parking slot with their preference of time place etc. Sub admin manages end user and super admin manages sub admin in the system.

1) *System Features:* The main features include the following:

- OTP verification based login.
- Nearest available slot.
- Bill generation
- APK generation.
- Google map API used user interface.
- Locking and unlocking through Bluetooth
- Payment gateway

2) *Assumptions and Dependencies:* In regard to this project we assume that the user need to have the following:

- fair knowledge of computer
- internet connection is must
- database access by admin only

IV. EXPERIMENTAL RESULTS

Our experimental result is performed in real time. We do registered into the system and try all sort of testing such as booking, payment etc. All functionality are working according to our requirements such as secure login through Bluetooth technology and locking unlocking, payment gateway, report generation, bill generation etc., and many more even we check the vulnerability of the system by our admin in term of security issues. We want to state that this system is highly reliable and safe to use with regard to security measures and our main concern was about the security.



Fig 1: Location slot view for users

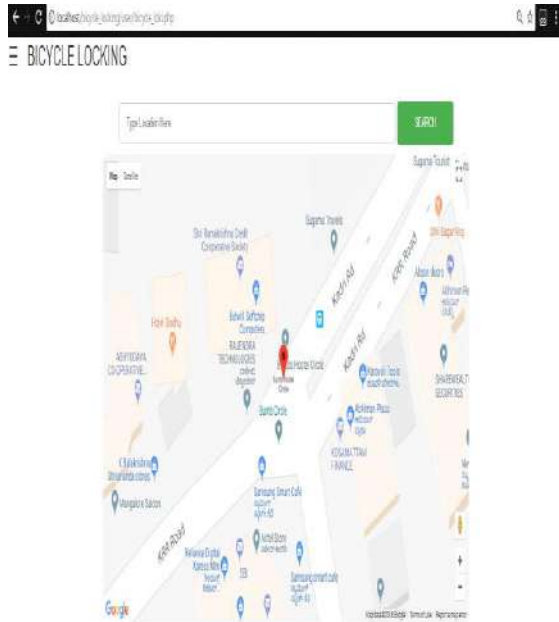


Fig II: Search location for users



Fig III: Nearest slot available display

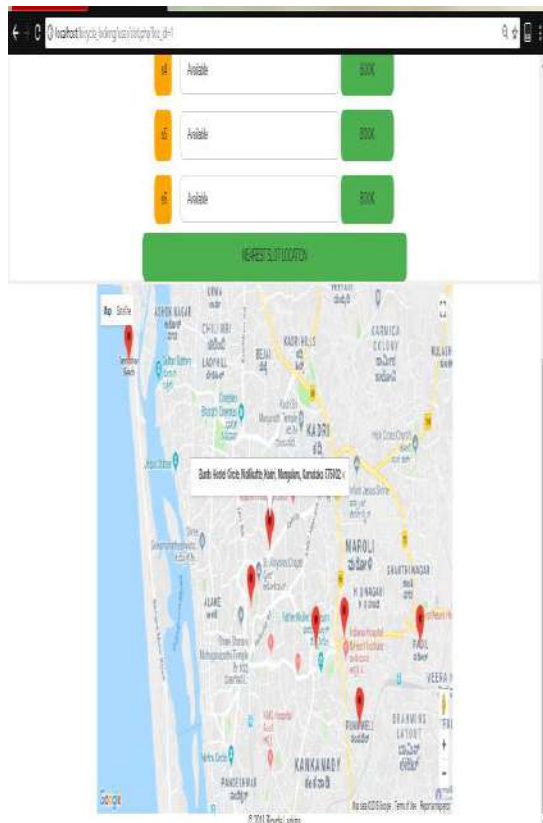


Fig IV: Booking page



Fig V: Vendor location add page

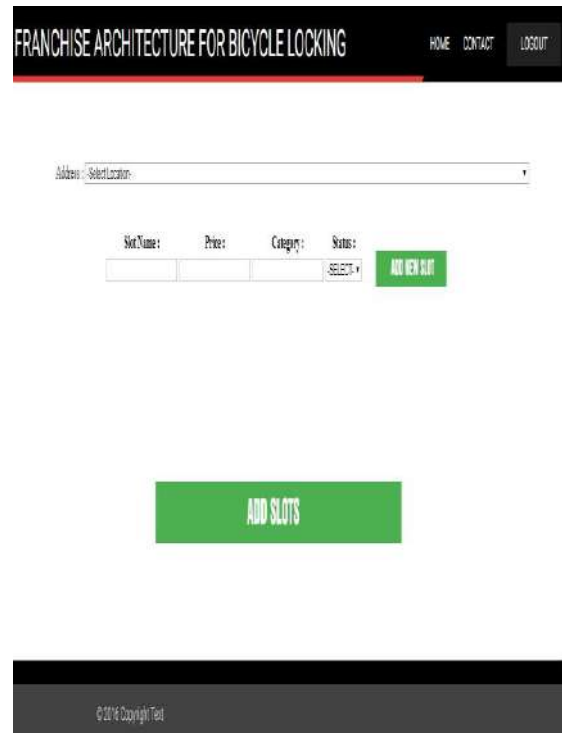


Fig VI: Vendor slot add page



Fig VII: Vendor transaction view page



Fig VIII: User home page

V. CONCLUSION

A bicycle locking mobile app and end user provides simple, easy and effective interface for the user. This application acts as a gateway between user and bicycle locking. This application can be operated by all type of users. This system provides easy and simple user interface which can be efficiently handled by people with less computer knowledge. And also this application is economically feasible as it can be developed using minimum cost, with minimum hardware and software requirements.

VI. FUTURE ENHANCEMENTS

There is a lot of scope for future enhancements in this system, as new user requirements emerge new ideas of implementation. New modules can be implemented to make the application more efficient. The project can be modernized in future as and when the requirement for the same arises, as it is very flexible in terms of development.

- GPS can be included in this system so that user can track their bicycle.
- Further notification through SMS can be implemented to notify the user and super admin when the slot is unlocked.

References

- [1] Sharp, Harry. "Bicycle locking system." U.S. Patent No. 5,007,260. 16 Apr. 1991.
- [2] Zastrow, Justin, Ira Hayes, and William Birgen. "Wireless method and Apparatus for Remote Lock Operating with Mobile Communication Device." U.S. Patent Application No. 15/330,938.
- [3] Dybtsev, Danil N., Hyunghil Chun, and Kimoon Kim. "Three-dimensional metal-organic framework with (3, 4)-connected net, synthesized from an ionic liquid medium." *Chemical Communications* 14 (2004): 1594-1595.
- [4] Zamir, Amir Roshan, and Mubarak Shah. "Accurate image localization based on google maps street view." *European Conference on Computer Vision*. Springer, Berlin, Heidelberg, 2010.
- [5] <https://ionicframework.com/docs/components/>
- [6] <https://codeburst.io/native-google-maps-and-geolocation-ionic-fe635a00249d>
- [7] www.parkzebra.com

Social Network based Categorization of Frequent News Items

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Abstract—Educating the mankind can be from various sources like printed and soft copy from various sources. In recent times social network and electronics media play a vital role in the development of human resource as well as to educate people. Huge potential of data are available from various source and can be discover and various study can be done on different criteria in order to understand the behaviours of human kind. To prioritize the information we need to have specific process based on significance and we can rank them accordingly. Media reports are mostly with high significance so it can be consider as essential information towards many stakeholder and society at a large. User interaction take place in social media over the given topic. This this paper we are focusing in recognizing the new aspect or topics across various platform in an unsupervised design called sociological categorization of frequent news item or feed.

Keywords—Information or data, social computing, social network analysis, topic identification, topic ranking.

I. INTRODUCTION

In recent times many researchers are pulling the information from numerous sources for various analysis. Information gathered contain provides specific message to the society and those gathered from media house mostly are authentic as the media persons personally goes to the ground area and report the actual report and they held the responsibilities for it. All kinds of social media are also contributing but with the doubt of its origin and authentication but through some specific process and topic modeling are consider good source of information.

Micro Blogging play vital role in communication media, Twitter is one among them and micro blogs are very powerful that it can exposed any scam which are not reported by new media it has millions of users and all interact on day to day basis.

An easy approach for identifying topic from various platform is by topic modeling. Few are listed here: Latent Dirichlet Allocation (LDA) [1], Probabilistic Latent Semantic Allocation (PLSA) [1][2].

We proposed a dynamic design namely Sociological Categorization of Frequent News items to gather information and we apply topic model and result are classified into MF, UA and UI. This application undergoes a framework for data mining, study similarity and validating by widespread controlled and hyper experiments.

II. RELATED WORK

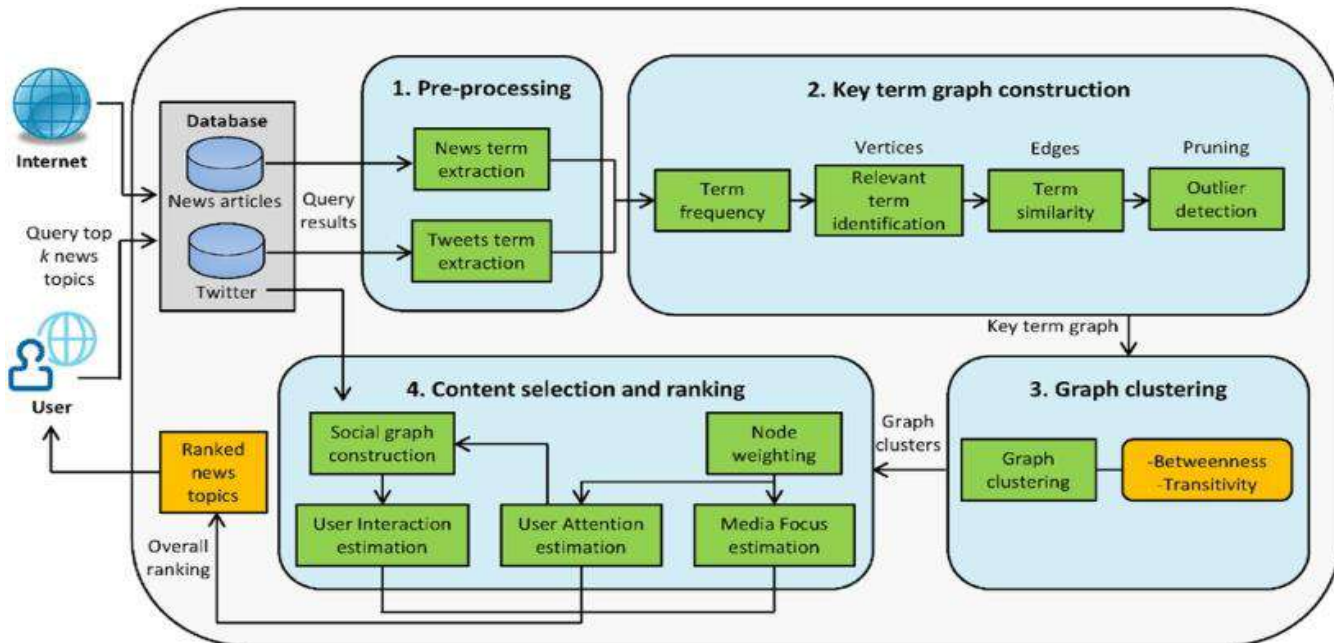
Main focus on our application are identification of topic, extraction, analysis, similarity and ranking. Efforts are been put in various area listed below:

A. Topic Identification

Exhaustive research being carried out for topic identification and modelling. Two direct method are LDA [1] and PLSA[2],[3]. In both the approaches temporal information lost occurs which turns into identifying predominant topic. LDA and PLSA extract topic from text corpora and rank them. . Cataldi *et al.* [4] suggested a topic discovery mechanism which collects real-time promising matter from Twitter. Zhao *et al.* [5] carried out comparable effort by developing a Twitter-LDA scheme to identify issues in news items. Both of them considers the individual interests of users.

B. Topic Ranking

Main idea of this application is to rank the tweet/feeds by means of how often it can release, estimate, and provide valuable impact reported from across all the media. TwitterStand[6] system by Sankaranarayanan et al. identifies the tweet and match to braking news.



C. Social Network Analysis

Topic significance is the key role in social media otherwise coverage of the topics goes meaningless most of the time. Kwan *et al.* [7] put efforts to observe the interaction between micro blog users and distinguish their commitment in relation to the topic reported. Our analysis applies the judgment to sustain the thought that superior reciprocity signifies greater significance

Information and keyword extraction are performed by collecting the news feed or tweets from various sources through some specialized process such as text processing, data mining techniques and even image processing with the comparison of the dataset that have been already identified beforehand. Many methods are applied for checking frequency of word [8], character and co-occurrence etc.

E. Co-Occurrence Similarity

Similarity plays vital role in ranking the news or tweets. Co-occurrence of the information gives details about the quality and impact of the information in this application. We intend to find all co-occurrence and do analysis so that we can come to the conclusion that its of highest value or degree of information which is impacting the society at a large, as millions of user are submitting the same pattern of information. Intention here is doing hypothesis on co-occurrence to bring out the relation as well as impact to all user.

III. THE FRAMEWORK

The Objective of our application is to identify the topic model, rank them based on significance and discussion taking place in various media channels. Our system framework is given below in fig. I. and it has mainly four stages.



A. Preprocessing: Key information are pulled and sent to filtered process from time to time

B. Key Term Graph Construction: Once we get the analysis value through datasets, key value, data modeling, ranking and significance. We construct the graph so that the implication of the feed or news can be easily understand by all the stakeholders.

C. Graph Clustering: Clustering of graph take place for the comparison from various news feed side as to figure out which micro blogs or media are best in reporting the authentic report and the result is integrated as a cluster of graph.

D. Content Selection and Ranking: This process take place with the comparison of MF, UA, UI. At foremost we extract the news feed or tweet from various micro blog and gives ranking.

IV. RESULTS AND DISCUSSION

The methods and the framework described above were place into application considering Java and JSP as the user end and MySQL as the server end. NetBeans 8.2 IDE was leveraged to place the system in place.

Fig II shows the landing page of the application. The menu item Get API redirects to Twitter application page from where the tweets are picked up

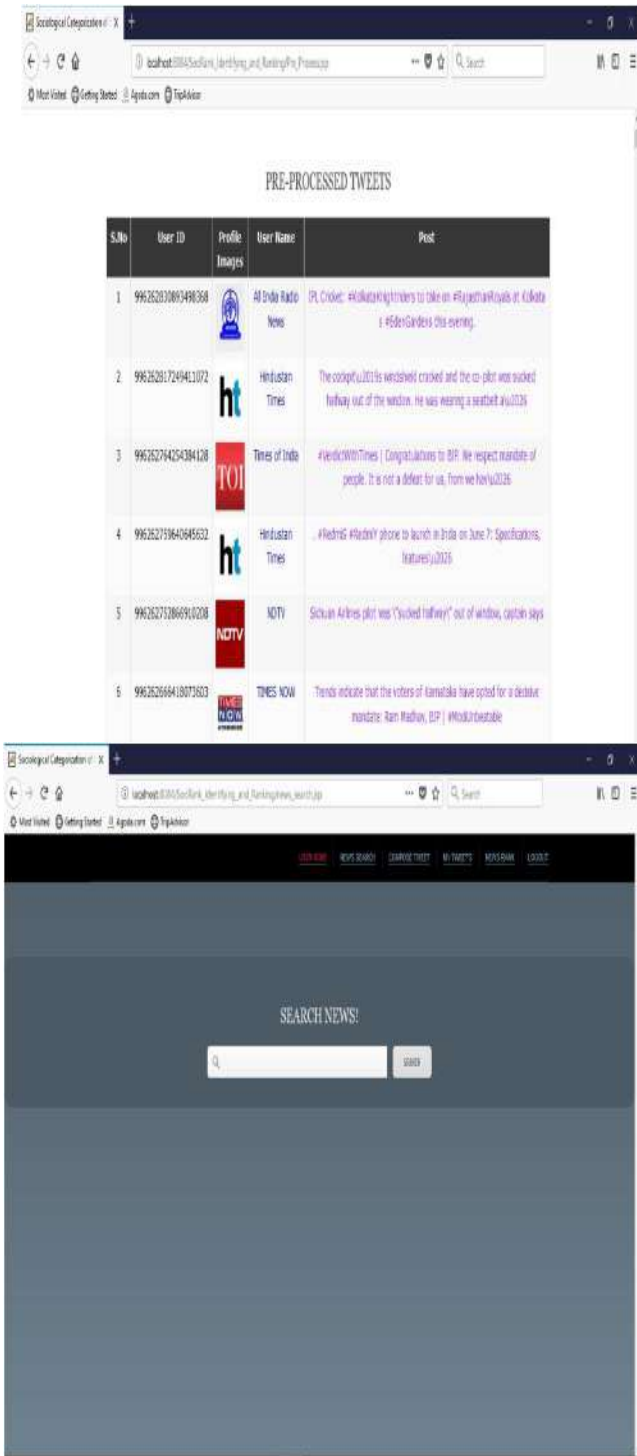


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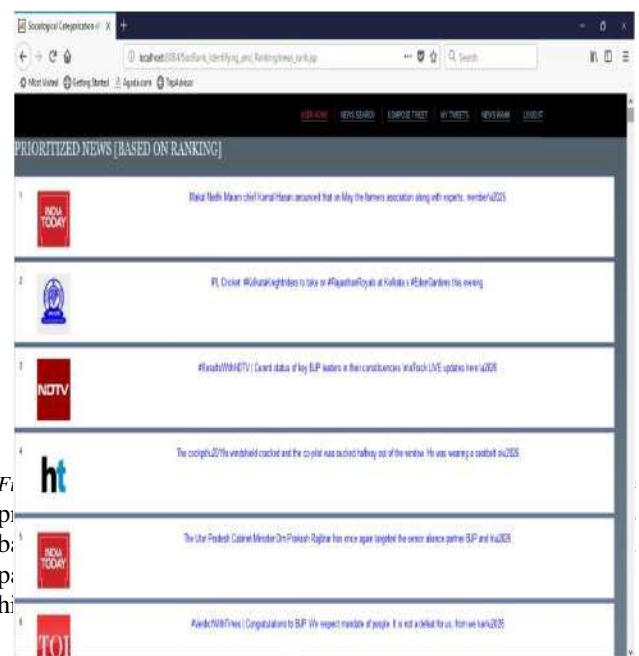


Fig VI: Pre-processed Tweets

Fig VI shows the tweets that have been pre-processed on the Admin side. Only the administrator of the application will get access to these pre-processed tweets.

V. CONCLUSION

An attempt has been made to collect the data from Twitter in the form of tweets and use the same for performing some data analysis. The API's leveraged in the application assist in getting redirected to Twitter application page from where the tweets are picked up. The tweets collected from Twitter are then pre-processed and made available to the end user wherein he/she can search for the news of his/her preference. The resultant tweets could then be ranked according to priority and presented to the user so that the users gets to know the trending piece of information in the social world.

References

- [1] D. M. Blei, A. Y. Ng, and M. I. Jordan, "Latent Dirichlet allocation," *J. Mach. Learn. Res.*, vol. 3, pp. 993–1022, Jan. 2003.
- [2] T. Hofmann, "Probabilistic latent semantic analysis," in *Proc. 15th Conf. Uncertainty Artif. Intell.*, 1999, pp. 289–296.
- [3] T. Hofmann, "Probabilistic latent semantic indexing," in *Proc. 22nd Annu. Int. ACM SIGIR Conf. Res. Develop. Inf. Retrieval*, Berkeley, CA, USA, 1999, pp. 50–57.
- [4] M. Cataldi, L. Di Caro, and C. Schifanella, "Emerging topic detection on Twitter based on temporal and social terms evaluation," in *Proc. 10th Int. Workshop Multimedia Data Min. (MDMKDD)*, Washington, DC, USA, 2010, Art. no. 4. [Online]. Available: <http://doi.acm.org/10.1145/1814245.1814249>.
- [5] W. X. Zhao et al., "Comparing Twitter and traditional media using topic models," in *Advances in Information Retrieval*. Heidelberg, Germany: Springer Berlin Heidelberg, 2011, pp. 338–349.
- [7] J. Sankaranarayanan, H. Samet, B. E. Teitler, M. D. Lieberman, and J. Sperling, "TwitterStand: News in tweets," in *Proc. 17th ACM SIGSPATIAL Int. Conf. Adv. Geograph. Inf. Syst.*, Seattle, WA, USA, 2009, pp. 42–51.
- [7] E. Kwan, P.-L. Hsu, J.-H. Liang, and Y.-S. Chen, "Event identification for social streams using keyword-based evolving graph sequences," in *Proc. IEEE/ACM Int. Conf. Adv. Soc. Netw. Anal. Min.*, Niagara Falls, ON, Canada, 2013, pp. 450–457.
- [8] H. P. Luhn, "A statistical approach to mechanized encoding and search- ing of literary information," *IBM J. Res. Develop.*, vol. 1, no. 4, pp. 309–317, 1957.

Use of Key Exposure Technique for Cloud Data Securing

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Abstract- Hackers are very active these day who can easily access the security of information system in cloud. Providing security measures in cloud is the major key to safeguard the data store into the cloud. Information security can be achieved by duplicating across the cloud server but it cost is very high. Data may be compromise to intruder where security measures taken through encryption as the security key can be hack easily by the hacker or native user. We can minimized almost by cent percent using cipher-text across the domain. The system uses multiple DES encryption and its very user friendly and system is safe as intruder won't be able to hijack the information from the system.

Keywords- Key exposure, data security, multiple storage.

I. INTRODUCTION

Cyber attacker usually break the data secrecy through various means and by hacking the private key. Mostly data are secure but sometimes compromise with the private key so one possible methods of securing the privacy of the data is by using Cipher text. Security measures are accomplished by distributing the cipher text chunks across the cloud.

In recent time's world had witnessed many exploration programs to break the user privacy. Safekeeping measures are deployed within the system to catch the criminals. Almost all service relied on encryption techniques to safeguard the data privacy against the backdoor or kickback.

In our paper, thorough study has been done in which encryption key are identified and gain access to various potion in data blocks. The hacker are good in gaining the key through backdoor or creating key through backdoor[1], or by intruding the system where key get stored. In order to counter such attack or intruder our security system must be of high reliable. Baston et al, talks about effective scheme to safeguard the plain text and even to recover in case intruder damaged the data. He achieved this with specialized encryption with linear transformation.

Baston shares similarities view of all-or-nothing transformation. An AONT is one techniques of encryption which usually used for pre-processing before cipher text encryption. AON key are preserved with privacy in case compromised with the intruders. In bastion required encryption only once.

The evaluation of encryption techniques is based on efficiency and performance to present techniques of encryption. It negotiable amount of performance deterioration is much lesser (5%) with comparison symmetric one and is significant advances towards performance of AON [2],[3]. Here we furthermore debate around the real-world observation with respects to incorporation of Bastion. The aids of ours in this paper is listed below:

- We suggest Bastion, a well organize system for maintaining data security against all the odds of compromising data. Here key for encryption is the only way to access ciphertext blocks.
- After the thorough investigation of Bastion we conclude that data confidentiality is maintain by encryption techniques with multiple ciphertext blocks.
- Logically and systematically we performed the evolution process of Bastion with assessment of various present encryption mechanism. Result evaluation shows that bastion drastically progresses the performance by around 50 % and more while comparing with AON techniques, also experience negligible security issues with comparison to semantic secure techniques of encryption.
- Our application focus on practical perception wrt the deployment of Bastion in present system as HYDRAsTOR grid system [4],[5].

Our application runs with two module namely administrator and End-user. End-user will be able to browse the file from local system or from other sources to store in the cloud and administrator has the provision of viewing, deleting, encrypting and splitting the content across the cloud at different level. End-user is capable of decrypting and viewing the data with the help of secrete code from the cloud. In order to check the activity of the attackers and to avoid the security measure we came up with an effective ciphertext by which system keeps protecting even intruders have to secrete key. This is accomplished by with the help of encryption function of triple DES and transformation.

Our security models deals with the security issues of our applications after that we try to overcome the issues related to security and define the details or scenario in which the key compromise can be removed from the system.

A. System Model

Application consider various storage mechanism in cloud by influencing numerous provider of commodity cloud such as Amazon, Google with the intention of providing belief at all domains in cloud. This system model is getting acceptance from across the cloud community [6],[7],[8]with the emergence of EMC, IBM and Microsoft with multi-layer functionality.[9][10][11]

Specifically, we try to reflect on a system S with storage servers $S_1, S_2 \dots S_n$ with the number of group of end user.

We presume that proper authentication system take place for all kinds of end users at the server side. Here mainly focus is given on read/write and data store concept [21] which implements two operations:

write(v)- It helps in splitting v into s pieces $\{v_1, \dots, v_s\}$ and sends $h v_j$ to server S_j , for $j \in [1 \dots s]$.

read(v) - It helps in reading routine and fetching the stored value v from the servers. For each $j \in [1 \dots s]$, piece v_j is downloaded from server S_j and all pieces are combined into v . First value in the data store is distinct value \perp , which happen to be an invalid input to *write(v)*.

B. Adversarial Model

Our application works on computationally confined adversary A , which is responsible for generating the key for long term cryptography in data encryption. This may achieved by the followings: I. Blocking the generated key through the backdoor and II. Stop compromising the key enable devices across the network.

Specifically our application consider the adversary can compromise the system but one of the servers and our model may provide access gain in order to access all but λ ciphertext blocks. If the adversary got to know that the information about the end user that store in the server and if somehow the intruder managed to download then no cryptography mechanism will be able to secure the data across the data store in cloud [12].

Without arguments, discussion and comparison it won't be easy to bring out the security and performance measures in the field of security in cloud environment. In comparison with Bastion CPA-encryption modes, Traditional CPA-encryption modes, such as the CTR mode, gives security but the security level is very low. Therefore with invent of an adversary furnished key encryption with ciphertext blocks will be able to provide data confidentiality.

CPA-encryption and secret sharing

One more security measure we provided is by mashing up of CPA encryption techniques and secrete sharing. Assume that a file f is encrypted and shared with an n -out-of- n secret-sharing mechanism then the structure is obviously $(n - 1)$ CAKE secure and is also *ind* secure. Though, secret-sharing of ciphertext is achieved at the data storage cost. E.g., every share will be large enough like a file f which is making use of seamless secret sharing scheme-that enabling the unrealistic storage of huge files. Distribution of key encrypted one across the data store with ciphertext is not safe from all an ind-adversary. Therefore it is an intelligent implementation in order to secure the encrypted key by downloading ciphertext blocks and key sharing and by computation of the encrypted one will lead our goal i.e., data security.

AON encryption

Let's recollect an AONT and remember that it is not encryption scheme so it avoids decryption in the process of gaining access to secrete key. AONT is less secure when we made comparison with ind-adversary which is capable of accessing ciphertext blocks. Best method is to use the combination of AONT with standard encryption. Rivest [3] recommends to perform some specific operation to pre-process the information with an AONT after that encryption method and will be best if we output with some mode of encryption. Such prototype is already discuss in AON encryption and delivers $(n-1)$ CAKE security. Present AON encryption systems need minimum of two round of block cipher encryption with two diverse keys [2], [3].

In original AONT mechanism minimum of one round is necessary which push in the key encryption of pseudo-ciphertext. Extra round is made available in order to safeguard the encrypted key which is isolated and kept secret to guaranteed CPA-Security. In this way this method of two round establish a significant overhead during the process of encrypting huge information or data. We describe all probable possibilities of making changes in AONTs of and to

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accomplished ind security and (n-1) CAKE security without bringing any weaknesses in encryption techniques and not by adding another round of cipher block encryption. This clearly state that the resolutions are not so acceptable in relations with safety and in occurring the huge overhead in comparison to Bastion, and probably may not be reliable for storing huge files in many cloud storage system.

IV. RESULTS AND DISCUSSION

The proposed method is carried out by considering Java and MySQL as the end user side and the server side end respectively; also NetBeans 8.2 IDE was used to breed our system.



Fig III: Login page

Fig III shows the login page of the user page where the user should key in his login credentials.



Fig I: Landing Page

Fig I represents the landing page of the application where both the user and the admin can do the designated operations.



Fig IV: User's Main Page

Fig IV details about the main page of the user where user can upload a new file or can view already uploaded files.

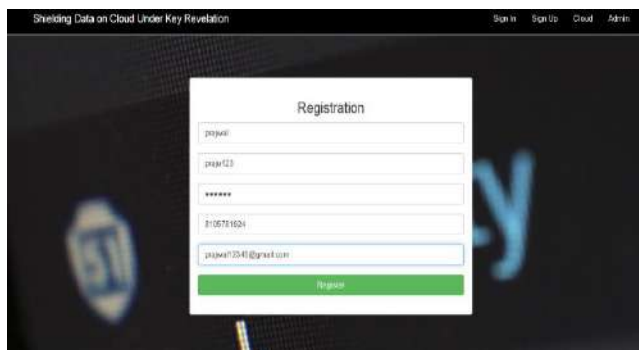


Fig II: Registration Page

Fig II shows the registration page where the user should provide the necessary details to enter into the system.

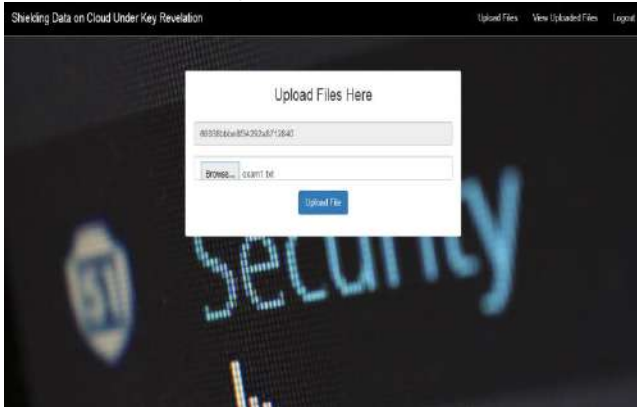


Fig V: Upload File Option for User

Fig V shows the page where user can select a particular file from the computer or a location and upload it to the cloud.

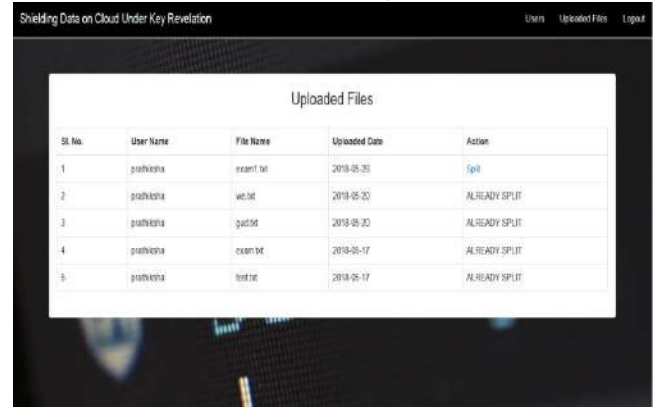


Fig VII: Split Files

Fig VII represents the page from which admin split the files and store it to various administrative cloud servers.

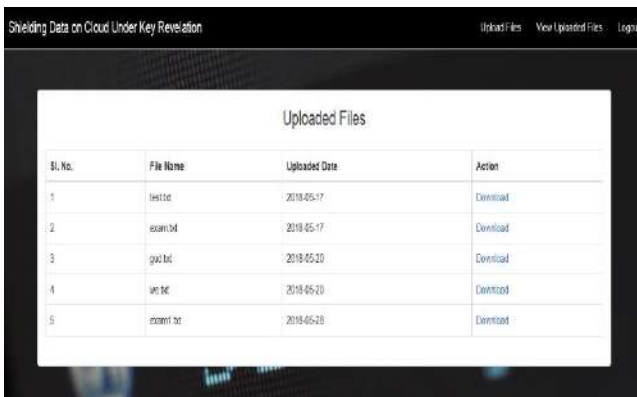


Fig VI: Uploaded Files

Fig VI displays the list of uploaded files of that particular user.

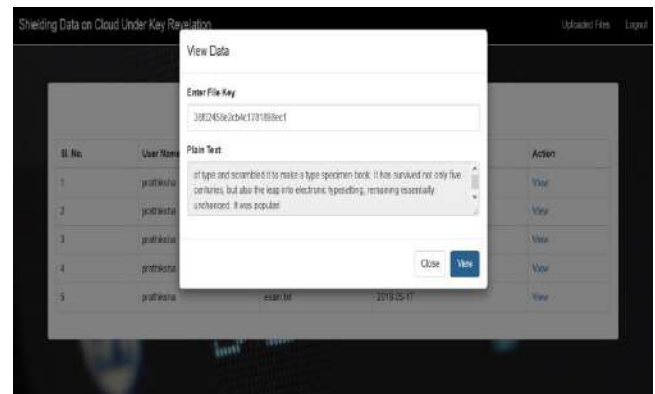


Fig IV: View Data

Fig IV End-user view/upload example

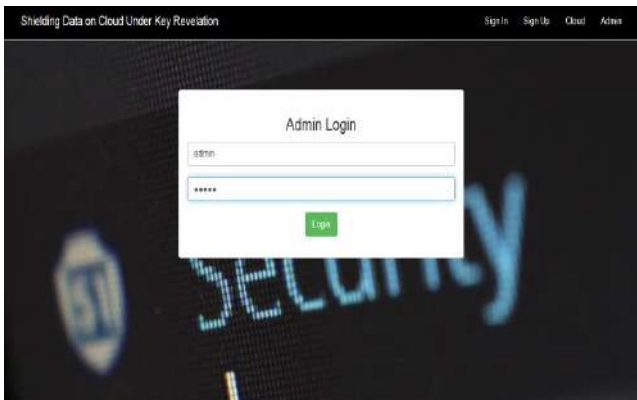


Fig VII: Admin Login

Fig VII shows the login page for the Admin

V. CONCLUSION

These days the intruders are highly skilled and very effective in order to steal the data from the user. Hackers are easily hacking and breaking the security measures even though we use the prevention mechanism for data security through encryption. Therefore in order to achieved the bridge gaps of security measures through backdoor or by stealing the secret key we need to bring new mechanism in the data security preventive measures. Once the secure key is compromise then the only way to minimize the effect is with the help of cipher text. Data security can be achieved by distributing the cipher text at various level of storage in the storage system.

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The intruders won't be able to access the data as the cipher text are well distributed in the storage system. This also helps in securing the voice and images while transferring across the network.

References

- [1] Wikipedia, "Edward Snowden," http://en.wikipedia.org/wiki/Edward_Snowden#Disclosure.
- [2] A. Desai, "The security of all-or-nothing encryption: Protecting against exhaustive key search," in *Advances in Cryptology (CRYPTO)*, 2000, pp. 359–375.
- [3] R. L. Rivest, "All-or-Nothing Encryption and the Package Transform," in *International Workshop on Fast Software Encryption (FSE)*, 1997, pp. 210–218.
- [4] C. Dubnicki, L. Gryz, L. Heldt, M. Kaczmarczyk, W. Kilian, P. Strzelczak, J. Szczepkowski, C. Ungureanu, and M. Welnicki, "HYDRAsstor: a Scalable Secondary Storage," in *USENIX Conference on File and Storage Technologies (FAST)*, 2009, pp. 197–210.
- [5] NEC Corp., "HYDRAsstor Grid Storage," <http://www.hydrastor.com>.
- [6] C. Basescu, C. Cachin, I. Eyal, R. Haas, and M. Vukolic, "Robust Data Sharing with Key-value Stores," in *ACM SIGACTSIGOPS Symposium on Principles of Distributed Computing (PODC)*, 2011, pp. 221–222.
- [7] A. Bessani, M. Correia, B. Quaresma, F. André, and P. Sousa, "DepSky: Dependable and Secure Storage in a Cloud-of-clouds," in *Sixth Conference on Computer Systems (EuroSys)*, 2011, pp. 31–46.
- [8] Z. Wu, M. Butkiewicz, D. Perkins, E. Katz-Bassett, and H. V. Madhyastha, "SPANStore: Cost-effective Geo-replicated Storage Spanning Multiple Cloud Services," in *ACM Symposium on Operating Systems Principles (SOSP)*, 2013, pp. 292–308.
- [9] EMC, "Transform to a Hybrid Cloud," <http://www.emc.com/campaign/global/hybridcloud/index.htm>.
- [10] IBM, "IBM Hybrid Cloud Solution," <http://www-01.ibm.com/software/tivoli/products/hybrid-cloud/>.
- [11] StorSimple, "Cloud Storage," <http://www.storsimple.com/>.
- [12] Cavalry, "Encryption Engine Dongle," <http://www.cavalrystorage.com/en2010.aspx/>.

A COMPREHENSIVE INVESTIGATION OF NETWORK VIRTUALIZATION

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Abstract-Due to the existence of multiple stakeholders with conflicting goals and policies, alterations to the existing Internet architecture are now limited to simple incremental updates; deployment of any new, radically different technology is next to impossible. To fend off this ossification, network virtualization has been propounded as a diversifying attribute of the future inter-networking paradigm. By introducing a plurality of heterogeneous network architectures cohabiting on a shared physical substrate, network virtualization promotes innovations and diversified applications. In this paper, we survey the existing technologies and a wide array of past and state-of-the-art projects on network virtualization followed by a discussion of major challenges in this area.

Keywords-Network, Virtualization

1. INTRODUCTION

The Internet has been stunningly successful over the course of past three decades in supporting multitude of distributed applications and a wide variety of network technologies. However, its popularity has become the biggest impediment to its further growth. Due to its multi-provider nature, adopting a new architecture or modification of the existing one requires consensus among competing stakeholders. As a result, alterations to the Internet architecture have become restricted to simple incremental updates and deployment of new network technologies have become increasingly difficult [1,2]. To fend off this ossification, network virtualization has been propounded as a diversifying attribute of the future inter-networking paradigm. Even though architectural purists view network virtualization as a means for evaluating new architectures, the pluralist approach considers virtualization as a fundamental attribute of the architecture itself [1]. They believe that network virtualization can eradicate the ossifying forces of the Internet and stimulate innovation [1,2].

1.1 What is Network Virtualization?

A networking environment supports network virtualization if it allows coexistence of multiple virtual networks on the same physical substrate. Specifically, network virtualization is a networking environment that allows multiple service providers to dynamically compose multiple heterogeneous virtual networks that coexist together in isolation from each other. Service providers can deploy and manage customized end-to-end services on those virtual networks for the end users by effectively sharing and utilizing underlying network resources leased from multiple infrastructure providers [4].

2. TECHNOLOGIES

The concept of multiple coexisting networks appeared in the networking literature in different capacities. In this section, we discuss four such incarnations: Virtual Local Area Networks (VLAN), and Virtual Private Networks (VPN).

2.1 Virtual Local Area Network

A Virtual Local Area Network (VLAN) [5] is a group of hosts with a common interest that are logically brought together under a single broadcast domain regardless of their physical connectivity. Since VLANs are logical entities, i.e., configured in software, they are flexible in terms of network administration, management, and reconfiguration. Moreover, VLANs provide elevated levels of trust, security, and isolation, and they are cost-effective.

2.2 Virtual Private Network

A Virtual Private Network (VPN) [6–8] is a dedicated communications network of one or more enterprises that are distributed over multiple sites and connected through tunnels over public communication networks (e.g., the Internet). Each VPN site contains one or more Customer Edge (CE) devices (e.g., hosts or routers), which are attached to one or more Provider Edge (PE) routers. Normally a VPN is managed and provisioned by a VPN Service Provider (SP) and known as Provider-Provisioned VPN (PPVPN) [9].

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3. LAYER OF VIRTUALIZATION

3.1 Physical Layer: UCLP

UCLP is a distributed network control and management system for CA*NET 4 network that allows end users to treat network resources as software objects, and lets them provision as well as dynamically reconfigure optical networks (at Layer 1). Users are able to join or divide light paths within a single domain, or across multiple independent management domains to create customized logical IP networks. UCLP takes a modular approach to resource management by introducing three distinct service layers. Customers and administrators configure and use end-to-end UCLP resources through the user access layer. The service provisioning layer manages service logic and data regarding light paths. Finally, the resource management layer deals with actual physical resources. UCLPv1.4 [11] introduced dynamic topology discovery process and enabled auto-routing through intelligent algorithms alongside already available manual light path configuration capabilities. Later, UCLPv2 [12,13] extended UCLP with the use of Service Oriented Architecture (SOA) and workflow technologies with an aim to form the underpinning architectural framework for extending UCLP to allow the interconnection of instruments, time slices, and sensors; and for incorporating virtual routers and switches.

3.2 Link Layer: VNET

VNET [14] is a Layer 2 overlay network for Virtual Machines (VMs) that implement a Virtual LAN (VLAN) spread over a wide area using Layer 2 Tunnelling Protocol (L2TP). Each physical machine hosting a virtual machine (VM) runs a VNET process that intercepts VM traffic and tunnels it to the appropriate destination. The destination is either another VM that can be contacted directly through VNET or an address external to the overlay. Traffic destined for an external address is routed through the overlay to a VNET proxy node, which is responsible for injecting the packets onto the appropriate network. The overlay thus consists of a set of TCP connections or UDP peers (VNET links) and a set of rules (VNET routes) to control routing on the overlay. Since VNET operates at Layer 2, it is agnostic to Layer 3. As a result, protocols other than IP can be used. In addition, VNET also supports migration of a VM from one machine to another without any participation from the VM's OS and all connections remain open after migration.

3.3 Network Layer: AGAVE

The main objective of the AGAVE [15-17] project is to provide end-to-end QoS-aware service provisioning over IP networks following the theme of QoS forwarding mechanisms such as IntServ [18] and DiffServ [19,20]. To achieve this, AGAVE proposes a new inter-domain architecture based on the novel concept of Network Planes (NPs), which allows multiple IP Network Providers (INPs) to build and provide Parallel Internets (PIs) tailored to end-to-end service requirements. NPs are internal to INPs and are created based on the service requirements described by the SPs. An NP can be engineered for routing, forwarding, or resource management. To enable end-to-end services over multi-provider environment, NPs from different INPs are connected together to form PIs based on inter-INP agreements. One of the interesting features of AGAVE is that it does not require all the NPs participating in a PI to be homogeneous resulting in greater flexibility. AGAVE replaces node-centric provisioning/configuration approach in favour of a more centralized network based configuration, which ensures configuration consistency between participating INPs and reduces configuration errors. Also, it supports an NP emulation function that assesses the status of the network and evaluates the impact of introducing new NPs before accepting new IP-connectivity provisioning requests.

4. CHARACTERISTIC COMPARISON OF VARIOUS NETWORK VIRTUALIZATION PROJECTS

Project	Influences of existing concepts	Architectural domain	Networking technology	Layer of virtualization	Granularity of virtualization
VNRMS	Programmable networks, VPN	Virtual network management	ATM/IP		Node/link
Tempest	Programmable networks	Enabling alternate control architectures	ATM	Link	
NetScript	Active networks	Dynamic composition of services	IP	Network	Node
Genesis	Programmable networks	Spawning virtual network architectures		Network	Node/link
VNET	VLAN, L2VPN	Virtual machine grid computing		Link	Node
VIOLIN	L2VPN, overlays	Deploying on-demand value-added services on IP overlays	IP	Application	Node
X-Bone	L3VPN, overlays	Automating deployment of IP overlays	IP	Network	Node/link
PlanetLab	Overlays	Deployment and management of overlay-based testbeds	IP	Application	Node
UCLP	L1VPN, SOA	Dynamic provisioning and reconfiguration of lightpaths	SONET	Physical	Link
AGAVE	IntServ, DiffServ, VPN, overlays	End-to-end QoS-aware service provisioning	IP	Network	
GENI	VPN, active and programmable networks, overlays	Creating customized virtual network testbeds	Heterogeneous		
VINI	VPN, overlays	Evaluating protocols and services in a realistic environment		Link	
CABO	DiffServ, VPN, active and programmable networks, overlays	Deploying value-added end-to-end services on shared infrastructure	Heterogeneous		Full
4WARD	Overlays, SOA, autonomic networks	Instantiation, deployment, and management of virtual networks in a commercial setting	Heterogeneous	Network	Full
NouVeau	DiffServ, overlays, active and programmable networks, VPN, autonomic networks	Deploying end-to-end virtual networks on shared infrastructure	Heterogeneous		Full
FEDERICA	SOA, IaaS, VPN	Experimental facility with reproducibility	Heterogeneous	Link	Node/link

Figure 1. Comparison of Network Virtualization Projects

5. KEY RESEARCH DIRECTIONS

5.1 Interfacing

Service providers synthesize physical resources from one or more infrastructure providers to create virtual networks. Infrastructure providers must provide well-defined interfaces to allow service providers to communicate and express their requirements. For interoperability, such interfaces should follow a standard that should be able to express virtual network requests in terms of virtual nodes and virtual links along with their corresponding attributes. An XML-based specification language can be a possible candidate in this respect. Appropriate interfaces between end users and service providers, between infrastructure providers, and between multiple service providers must also be identified and standardized.

5.2 Signalling and Bootstrapping

Before creating a virtual network, a service provider must already have network connectivity to one or more infrastructure providers in order to issue its requests. This introduces circularity where network connectivity is a prerequisite to itself [3]. As long as a network virtualization environment is not mature enough to support itself, signalling must be handled through out-of-band communication mechanisms (e.g., the current Internet). Bootstrapping capabilities are required to allow service providers to customize the virtual resources allocated to them. Standard methods to make programmability of the network elements available to the service providers must also be developed [28]. Both signalling and bootstrapping call for at least another network that will always be present to provide connectivity to handle these issues.

5.3 Resource Allocation

Resource allocation in a network virtualization environment refers to static or dynamic allocation of virtual nodes and links on physical nodes and paths, respectively. It is also known as the virtual network embedding problem in the existing literature. Embedding of virtual networks with constraints on nodes and links can be reduced to the NP-hard multi-way separator problem [29] even when all virtual network requests are known in advance. In order to provide efficient heuristics, Internet

clean-slate design: what and why?, SIGCOMM Computer Communication Review 37 (3) (2007) 59–64 New Generation Network Architecture: AKARI Conceptual Design (ver1.1) (June 2008).s been restricting the problem space in different dimensions, which include: (i) considering offline version of the problem (i.e., all the requests are known in advance) [30–32], (ii) ignoring either node requirements or link requirements [33,30], (iii) assuming infinite capacity of the substrate nodes and links to obviate admission control [33,30,31], and (iv) focusing on specific topologies [30]. Yu et al. [34] addressed these issues by envisioning support from the substrate network through node and link migration as well as multi-path routing. Chowdhury et al. [27] proposed embedding algorithms based on the mathematical formulation of the embedding problem that outperform the previous algorithms in terms of acceptance ratio and total revenue. Unlike others following a centralized approach, Houidi et al. [35] proposed a distributed embedding algorithm but could not achieve competitive performance. All of these algorithms perform static resource allocation.

5.4 Resource Discovery

In order to allocate resources for requests from different service providers, infrastructure providers must be able to determine the topology of the networks they manage as well as the status of the corresponding network elements (i.e., physical nodes and interconnections between them) [3]. Furthermore, adjacent infrastructure providers must also share reachability information to be able to establish links between their networks to enable inter-domain virtual network instantiation. UCLP promotes a combination of event-based and periodic topology discovery using an additional topology database [11]. Events update the topology database of an infrastructure provider, and a periodic refresh ensures that even if some events were not notified, the topology database is fresh. CABO argues for the use of a separate discovery plane run by the infrastructure providers as proposed in the 4D network management architecture [36]. Efficiently gathering and dissemination of such information in decision elements could be achieved via discovery techniques discussed in existing distributed computing literature (e.g., Remos [37]).

5.5 Admission Control and Usage Policing

Infrastructure providers must ensure that resources are not over-provisioned to uphold QoS guarantees. Consequently, they have to perform accurate accounting and implement admission control algorithms to ensure that resources allocated to the virtual networks do not exceed the physical capacity of the underlying network. Existing solutions perform admission control while statically embedding virtual networks [34,27]. However, they do not allow dynamic resizing of allocated resources (i.e., adding or removing virtual nodes or links, increasing or decreasing allocated capacities). In order to avoid constraint violations by globally distributed virtual networks, distributed policing mechanisms must be employed to make sure that service providers cannot overflow the amount of resources allocated to them by direct or indirect means. Raghavan et al. [97] presented such a global rate limiting algorithm coordinated across multiple sites in the context of cloud-based services in the existing Internet. Similar mechanisms need to be developed in the context of network virtualization too.

5.6 Resource Scheduling

When establishing a virtual network, a service provider requires specific guarantees for the virtual nodes' attributes as well as the virtual links' bandwidth allocated to its network [3]. For virtual routers, a service provider might request guarantees for a minimum packet processing rate of the CPU, specific disk requirements, and a lower bound on the size of the memory. On the other hand, virtual link requests may range from best-effort service to fixed loss and delay characteristics found in dedicated physical links. To provide such guarantees and to create an illusion of an isolated and dedicated network to each service provider, infrastructure providers must employ appropriate scheduling algorithms in all of the network elements. Existing system virtualization technologies provide efficient scheduling mechanisms for CPU, memory, disk, and network interface in each of the virtual machines running on the host machine [39]. Network virtualization can extend these mechanisms to implement resource scheduling in the physical infrastructure. Previous results from research on packet scheduling algorithms for IP networks can also be useful in the design of schedulers.

5.7 Naming and Addressing

Due to potential heterogeneity of naming and addressing schemes in coexisting virtual networks, end-to-end communication and universal connectivity is a major challenge in a network virtualization environment. In addition, end users can simultaneously connect to multiple virtual networks through multiple infrastructure providers using heterogeneous technologies to access different services, which is known as über-homing [26]. Incorporating support for such heterogeneity in multiple dimensions is a fundamental problem in the context of network virtualization. Recently proposed iMark [26] separates identities of end hosts from their physical and logical locations to add an additional level of indirection and, with the help of a global identifier space, provides universal connectivity without revoking the autonomy of concerned physical and virtual networks. However, while conceptually possible, iMark is not physically implementable due to excessive memory requirements. Therefore, one key research direction in naming and addressing is to find a viable global connectivity enabling framework.

5.8 Dynamism and Mobility Management

Network virtualization environment is highly dynamic. At macro level, virtual networks with shared interests can be dynamically aggregated together to create federation of virtual networks. Multiple federations and virtual networks can also come together to form virtual network hierarchies [26]. Aggregation and dissolution of control and data planes (e.g., naming, addressing, routing, and forwarding information) for macro level dynamism is an unresolved issue. At micro level, mobility of end users from one physical location to another and migration of virtual routers for operation and management purposes [24] poses the biggest challenge. Finding the exact location of any resource or end user at a particular moment and routing packets accordingly is a complex research challenge that needs efficient solution. In addition, network virtualization allows end users to move logically from one virtual network to another, which further complicates the problem.

5.9 Virtual Network Operations and Management

Network operations and management has always been a great challenge for the network operators. Division of accountability and responsibilities among different participators in a network virtualization environment promises increased manageability and reduced scopes for error [3]. Keller et al. [25] propose proactive and reactive mechanisms to enforce accountability for hosted virtual networks. Considerable flexibility must be introduced from the level of Network Operations Centers (NOCs) to intelligent agents at network elements, to enable individual service providers configure, monitor, and control their virtual networks irrespective of others. The concept of MIBlets [22] used in VNRMS to gather and process performance statistics for each of the coexisting virtual networks instead of using a common MIB can be a good starting point. Since a virtual network can span over multiple underlying physical networks, applications must also be developed to aggregate information from diverse, often conflicting, management paradigms followed by participating infrastructure providers. Introducing a common abstraction layer, to be followed by all the management software's, can be an effective solution [40]. Failures in the underlying physical network components can give rise to cascading failures in the virtual networks directly hosted on those components. For instance, a physical link failure will result in failures of all the virtual links that pass through it. Similarly, any physical node failure might require re-installations of all the service provider's custom software's. Detection and effective isolation of such failures as well as prevention and recuperation from them to stable states are all open research challenges.

5.10 Security and Privacy

Even though network virtualization strives for isolation of faults and attack impacts, it does not necessarily obviate existing threats, intrusions, and attacks to physical and virtual networks. In fact, to some extent, network virtualization gives rise to a new array of security vulnerabilities. For instance, a Denial-of-Service (DoS) or a Distributed DoS (DDoS) attack against the physical network in a virtualized environment will affect all the virtual networks hosted on that network. Programmability of network elements – powerful and expressive in trusted hands – can increase vulnerability if there are security holes in programming models. To avoid such pitfalls, recent proposals (e.g., CABO) argue for controlled programmability by trading off flexibility for security without any definitive answer to permissible levels access to programmable hardware. A detailed study of possible security vulnerabilities can give insights into developing programming paradigms [41] and virtualization environments that are secure and robust against known attacks. Established secured tunnelling and encryption mechanisms (e.g., IPsec [10]) in VPNs can also be used in this context to increase security and enforce privacy.

5.11 Heterogeneity of Networking Technologies

Each networking technology has its own set of unique characteristics and poses challenges that require specific solutions for provisioning, operation, and maintenance of virtual network on those platforms. For instance, UCLP virtualizes optical networks capitalizing on the property of light paths that can be physically sub-divided into smaller light paths. Virtual Sensor Networks (VSN) [42], on the other hand, deals with providing protocol support for dynamic formation, usage, adaptation, and maintenance of subsets of sensors under unique power constraints. Similarly, virtualization of wireless networks using different multiplexing techniques creates different complications, e.g., node synchronization and managing device states [43]. End-to-end network virtualization requires framework that handle interactions between such contrasting underlying infrastructures while providing a generic and transparent interface for service providers to easily compose and manage virtual networks.

6. CONCLUSION

Most researchers agree that the Internet has reached a tipping point where most of their time and effort is spent in putting band aids on its existing flaws rather than in cultivating novel ideas. To fight back this ossification, redesign of the Internet is a bare necessity [44]. Instead of creating yet another one-size-fits-all architecture, a versatile networking paradigm must be established that will be flexible enough to support multiple coexisting architectures through network virtualization [1,2]. As a result, major initiatives on next-generation networks (e.g., FIND 6 projects in the US, FIRE 7 projects in the EU, Asia Future Internet (AsiaFI 8), New Generation Network (NWGN) forum [45] in Japan, and Future Internet Forum (FIF 9) in South Korea) all around the world are promoting inclusion of network virtualization concepts in their core architectural designs. Moreover, network virtualization stands at a unique point in the current virtualization landscape as the missing link that will

interconnect all other virtualized appliances, ranging from operating systems, storage systems to servers and even large data centres, to create a complete semblance of a virtualized computing environment. In this paper, we have surveyed the past and the state of the art in network virtualization research. It is evident that even though network virtualization promises an open, flexible, and heterogeneous networking environment, it will also pose a string of challenges in terms of instantiation, operation, and management that will require coordinated attention from researchers working in networking and other related fields for its success and wide acceptance.

7. REFERENCES

- [1] T. Anderson, L. Peterson, S. Shenker, J. Turner, Overcoming the Internet impasse through virtualization, *Computer* 38 (4) (2005) 34–41.
- [2] J. Turner, D. Taylor, Diversifying the internet, in: *Proceedings of the IEEE Global Telecommunications Conference (GLOBECOM'05)*, vol.2, 2005.
- [3] N. Feamster, L. Gao, J. Rexford, How to lease the internet in your spare time, *SIGCOMM Computer Communication Review* 37 (1) (2007) 61–64.
- [4] N.M.M.K. Chowdhury, R. Boutaba, Network virtualization: state of the art and research challenges, *IEEE Communications Magazine* 47 (7) (2009) 20–26
- [5] L.S. Committee, IEEE Standard for Local and Metropolitan Area Networks-Virtual Bridged Local Area Networks, *IEEE Std 802.1Q-2005* (May 2006).
- [6] P. Ferguson, G. Huston, What is a VPN?, *Tech. Rep.*, Cisco Systems(1998).
- [7] E. Rosen, Y. Rekhter, BGP/MPLS VPNs, *RFC 2547* (March 1999).
- [8] E. Rosen, Y. Rekhter, BGP/MPLS IP Virtual Private Networks (VPNs), *RFC 4364* (February 2006).
- [9] L. Andersson, T. Madsen, Provider Provisioned Virtual Private Network (VPN) Terminology, *RFC 4026* (March 2005).
- [10] S. Kent, K. Seo, Security Architecture for the Internet Protocol, *RFC 4301* (December 2005).
- [11] J. Recio, E. Grasa, S. Figuerola, G. Junyent, Evolution of the usercontrolled lightpath provisioning system, in: *Proceedings of the Seventh International Conference on Transparent Optical Networks*, vol. 1, 2005, pp. 263–266.
- [12] B. Nandy, D. Bennett, I. Ahmad, S. Majumdar, B. St-Arnaud, User Controlled Lightpath Management System based on a Service Oriented Architecture (2006). <<http://www.solananetworks.com/UCLP/files/UCLPv2-SOA.pdf>>.
- [13] E. Grasa, G. Junyent, S. Figuerola, A. Lopez, M. Savoie, Uclpv2: a network virtualization framework built on web services, *IEEE Communications Magazine* 46 (6) (2008) 126–134.
- [14] A. Sundararaj, P. Dinda, Towards virtual networks for virtual machine grid computing, in: *Proceedings of the Third USENI Virtual Machine Research and Technology Symposium (VM'04)*, 2004, pp. 177–190.
- [15] M. Boucadair, B. Decraene, M. Garcia-Osma, A.J. Elizondo, J.R. Sanchez, B. Lemoine, E. Mykoniati, P. Georgatsos, D. Griffin, J. Spencer, J. Griem, N. Wang, M. Howarth, G. Pavlou, S. Georgoulas, B. Quoitin, Parallel Internets Framework, *AGAVE Deliverable* (2006) (Id: AGAVE/WP1/FTRD/D1.1/public).
- [16] L. Andersson, E. Rosen, Framework for Layer 2 Virtual Private Networks (L2VPNs), *RFC 4664* (September 2006).
- [17] N. Wang, D. Griffin, J. Spencer, J. Griem, J.R. Sanchez, M. Boucadair, E. Mykoniati, B. Quoitin, M. Howarth, G. Pavlou, A.J. Elizondo, M.L.G. Osma, P. Georgatsos, A framework for lightweight QoS provisioning: network planes and parallel Internets, in: *Proceedings of the 10th IFIP/IEEE International Symposium on Integrated Network Management (IM'07)*, 2007, pp. 797–800.
- [18] R. Braden, D. Clark, S. Shenker, Integrated Services in the Internet Architecture: An Overview, *RFC 1633* (Informational) (June 1994).
- [19] S. Blake, D. Black, M. Carlson, E. Davies, Z. Wang, W. Weiss, An Architecture for Differentiated Services, *RFC 2475* (December 1998).
- [20] D. Grossman, New Terminology and Clarifications for DiffServ, *RFC 3260* (Informational) (April 2002).
- [21] W. Ng, R. Boutaba, A. Leon-Garcia, Provision and customization of ATM virtual networks for supporting IP services, in: *Proceedings of the IEEE ATM Workshop'1999*, 1999, pp. 205–210.
- [22] W. Ng, D. Jun, H. Chow, R. Boutaba, A. Leon-Garcia, Miblets: a practical approach to virtual network management, in: *Proceedings of the Sixth IFIP/IEEE International Symposium on Integrated Network Management (IM'99)*, 1999, pp. 201–215.
- [23] M. Kounavis, A. Campbell, S. Chou, F. Modoux, J. Vicente, H. Zhuang, The Genesis Kernel: a programming system for spawning network architectures, *IEEE Journal on Selected Areas in Communications* 19(3) (2001) 511–526.
- [24] Y. Wang, E. Keller, B. Biskeborn, J. van der Merwe, J. Rexford, Virtual routers on the move: live router migration as a network management primitive, in: *Proceedings of the ACM SIGCOMM'08*, 2008, pp. 231–242.
- [25] E. Keller, R. Lee, J. Rexford, Accountability in hosted virtual networks, in: *Proceedings of ACM SIGCOMM Workshop on Virtualized Infrastructure Systems and Architectures (VISA)*, 2009.
- [26] N.M.M.K. Chowdhury, F. Zaheer, R. Boutaba, iMark: an identity management framework for network virtualization environment, in: *Proceedings of the 11th IFIP/IEEE International Symposium on Integrated Network Management (IM)*, 2009.
- [27] N.M.M.K. Chowdhury, M.R. Rahman, R. Boutaba, Virtual network embedding with coordinated node and link mapping, in: *Proceedings of the 28th Conference on Computer Communications (INFOCOM)*, 2009.
- [28] J. Mogul, P. Yalagandula, J. Tourrilhes, R. McGeer, S. Banerjee, T. Connors, P. Sharma, Orphal: API Design Challenges for Open Router Platforms on Proprietary Hardware, *Tech. Rep. HPL-2008-108*, HP Labs (2008).
- [29] D. Andersen, Theoretical Approaches to Node Assignment, *Unpublished Manuscript* (2002).
- [30] J. Lu, J. Turner, Efficient Mapping of Virtual Networks onto a Shared Substrate, *Tech. Rep. WUCSE-2006-35*, Washington University (2006).
- [31] Y. Zhu, M. Ammar, Algorithms for assigning substrate network resources to virtual network components, in: *Proceedings of the IEEE INFOCOM'06*, 2006.
- [32] A. Gupta, J.M. Kleinberg, A. Kumar, R. Rastogi, B. Yener, Provisioning a virtual private network: a network design problem for multicommodity flow, in: *ACM Symposium on Theory of Computing*, 2001, pp. 389–398.
- [33] J. Fan, M. Ammar, Dynamic topology configuration in service overlay networks – a study of reconfiguration policies, in: *Proceedings of the IEEE INFOCOM'06*, 2006.
- [34] E.K. Lua, J. Crowcroft, M. Pias, R. Sharma, S. Lim, A survey and comparison of peer-to-peer overlay network schemes, *IEEE Communications Surveys & Tutorials* 7 (2) (2005) 72–93.
- [35] I. Houidi, W. Louati, D. Zeghlache, A distributed virtual network mapping algorithm, in: *Proceedings of IEEE ICC*, 2008, pp. 5634–5640.

-
- [36] L. Peterson, T. Anderson, D. Culler, T. Roscoe, A blueprint for introducing disruptive technology into the Internet, *SIGCOMM Computer Communication Review* 33 (1) (2003) 59–64.
- [37] P.A. Dinda, T. Gross, R. Karrer, B. Lowekamp, N. Miller, P. Steenkiste, D. Sutherland, The architecture of the remos system, in: *Proceedings of the 10th IEEE International Symposium on High Performance Distributed Computing (HPDC'01)*, 2001, p. 252.
- [38] B. Raghavan, K. Vishwanath, S. Ramabhadran, K. Yocum, A.C. Snoeren, Cloud control with distributed rate limiting, in: *Proceedings of the SIGCOMM'07*, 2007, pp. 337–348. [98] D. McPherson et al., Core network design and vendor prophecies, in: *NANOG 25*, 2003.
- [39] J.D. Touch, Y.-S. Wang, L. Eggert, G. Finn, A Virtual Internet Architecture, Tech. Rep. TR-570, USC/Information Sciences Institute (2003).
- [40] N. Fujita, J.D. Touch, V. Pingali, Y.-S.Wang, A dynamic topology and routing management strategy for virtual IP networks, *IEICE Transactions on Communications* E89-B (9) (2006) 2375–2384.
- [41] J.E. van der Merwe, S. Rooney, I. Leslie, S. Crosby, The Tempest—a practical framework for network programmability, *IEEE Network Magazine* 12 (3) (1998) 20–28.
- [42] A.P. Jayasumana, Q. Han, T.H. Illangasekare, Virtual sensor networks – a resource efficient approach for concurrent applications, in: *Proceedings of the International Conference on Information Technology (ITNG'07)*, IEEE Computer Society, Washington, DC, USA, 2007, pp. 111–115.
- [43] G. Smith, A. Chaturvedi, A. Mishra, S. Banerjee, Wireless virtualization on commodity 802.11 hardware, in: *Proceedings of the Second ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation and Characterization (WinTECH'07)*, ACM, New York, NY, USA, 2007, pp. 75–82.
- [44] A. Feldmann, Internet clean-slate design: what and why?, *SIGCOMM Computer Communication Review* 37 (3) (2007) 59–64
- [45] New Generation Network Architecture: AKARI Conceptual Design (ver1.1) (June 2008).