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Intelligent Model for Automating PID Controller Tuning for Industrial Water Level Control System

Publisher: IEEE

Parvathy Thampi M.S ; G. Raghavendra All Authors

Abstract:PID Controller has contributed significantly towards industrial control system due to its simplified structure and implementation. After reviewing the existing system, it... **View more**

▸ Metadata

Abstract:
PID Controller has contributed significantly towards industrial control system due to its simplified structure and implementation. After reviewing the existing system, it has been noticed that there is a potential challenge associated with tuning the traditional PID controller, which depends upon the maximum inclusion of the manual process. Considering an industrial water tank system, the proposed system develops a concept of a PID controller to maintain the desired level of water in the tank to achieve higher efficiency. The proposed study constructs a Reinforcement learning Agent to achieve optimal control parameters. The performance of the proposed study is compared with the existing tuning method. Based on the simulated study outcome, it has been analyzed that the proposed study provides intelligent and automatic control for maintaining the desired level of water in the tank. The proposed study is able to continuously maintain the water level in tanks with a smooth transition control process.

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Contents

Water is a precious resource provided by nature. The application of water is limited to drinking purposes, but it also has vital usage in many industrial, chemical, commercial, and agricultural processes. Inappropriate use and waste of water can severely harm the environment. Therefore, appropriate management measures should be taken to sustain lives and maintain the environment better. In this regard, the water level control mechanism considered as an essential process in many industrial and chemical applications such as milk tank-level measuring, beer or wine tank level measuring, level measurement of the acid tank, level of oil and solvent containers in the chemical industry, water level reading in the water treatment plant, and estimation of water level in the reservoir. Adequate knowledge about the level of materials in tanks or containers is essential in many industrial processes. The water level in a tank needs to be maintained at a specific desired value for the process's adequate functioning. However, it is difficult to achieve in many cases, which may bring losses to the company or industries. A common problem in this context is the control issue in water level management in storage tanks, which is performed under a closed-loop state. An open-loop form is impractical, and water level measurement is a complex process in the industrial production processes.

Modelling of Automated System based on Hybrid Learning and nsemble Mechanism for Forecasting Future Solar Energy Generation

Publisher: IEEE

Parvathy Thampi M. S ; G. Raghavendra All Authors

Abstract: Due to changes in weather conditions, solar power generation is prone to fluctuations. Therefore, precise forecasting of future solar power generation is essential for ma... View more

▸ Metadata

Abstract:
Due to changes in weather conditions, solar power generation is prone to fluctuations. Therefore, precise forecasting of future solar power generation is essential for managing an energy network. Various solar energy prediction models based on machine learning methods have been introduced in the existing literature. However, most of the existing literature lacks a proper selection of learning models and feature engineering. A hybrid learning model is developed based on the joint operation of various machine learning techniques empowered by ensemble learning mechanisms in the proposed work. Suitable data preparation and feature engineering are performed, and five important meteorological time-series features were selected to train the proposed hybrid model. The study outcome and performance assessment confirms the potential of the proposed

References

Keywords

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solar energy forecasting model. The proposed hybrid model has been shown to predict solar radiation with an accuracy of 93%, which exhibits the robustness and stability of the proposed hybrid prediction system.

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Contents

Due to the rapid rise in industrialization in recent years, the increasing electricity usage has led to exponential demand and caused significant environmental concerns regarding carbon emissions. There is a growing global commitment in the research area of developing efficient electricity grids and networks in this regard. Also, there has been a significant rise in replacing the existing power generation systems with solar-driven energy generation systems due to photovoltaic cell's essential characteristics. The photovoltaic cell offers high energy density, sufficient conversion efficiency, and compatibility with sensor technology and low-cost electronics circuits [1]. A photovoltaic cell is an electrical module that directly transforms solar radiation into electrical energy. Therefore, a solar-driven energy system is abundant that can meet the rising electricity demand and ensures a reduction in the cost compared to electricity generation using fossil fuels while reducing carbon dioxide emissions and conserving natural resources [2].

Role of IoT in Health Care System

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ABSTRACT

Most notable technical emergence in Computer Science and Electronic engineering have been merged, and has resulted in IoT ie. Internet of Things. It is about the network made by the physical objects which have sensors, software, hardware, and other technologies for exchanging data with other systems and devices over the internet. In last few years the impact of IOT in healthcare has been significantly increased. In healthcare domain to increase reliability, accuracy and productivity IOT is playing a crucial role. With the population increament health issues are also rising and the necessity of technological solution is demanded. IOT is a new era technology giving hope in the medical health care system. IOT plays a major role in monitoring health.

KEYWORDS: Internet of Things, Healthcare, issues, applications, computer science

I. INTRODUCTION

Internet of things is used for protection and security in various fields. To improve remote sensing of the conditions of patients, for anticipating conditions of patients, and for other patient related purposes a powerful IoT therapeutic administrations system is used [1-3]. Traditional technologies for providing security cannot be directly used in IoT, therefore various models and stacks are required [4]. As a characteristics of health care data that guarantee security, protection, safety, efficiency, authentication IoT is used [5]. It helps to save patients life and to improve the health of patients. It uses data and communication technologies for protecting patients' data. Pandemics and other major diseases are spreading rapidly in the world and is of greater concern in the current scenario [6-9].There is a necessity to create a strong healthcare-related systems and different methods using information and communication technology. They can be used to develop applications for health related issues [10].

In this paper effort is put to consider (1) the various issues patients undergo (2) technologies available for solving their problems [11-12]. It gives the glimpse of various IoT solutions for protecting patients' data and IoT solutions for these issues [13]. According to one survey more than

Eco Friendly Green Cloud Computing

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ABSTRACT

Cloud computing has played major role for storing and handling huge data by the virtualization of data centres and servers to make them very efficient. Cloud computing gives power to compute and provides service to the users around the whole world. Thus providing customers with higher performance which is of lower cost compared to dedicated high-performance computing machines. IT sectors consume large amount of power and energy, resulting as a main source of Carbon dioxide emission. To overcome this, we need Green Cloud Computing for IT resources to be energy efficient and operating at cheaper cost. In order to reach optimal standards for green_cloud computing. The efficiency of the power of Cloud must be very meticulously analysed. Cloud computing is a better alternative being greener than individual datacentres by usingless number of servers.Data centres using cloud are far better than the traditional ones. Thereby the impact of carbon is reduced.

KEYWORDS: Cloud Computing, Carbon dioxide emission Green cloud computing, Clustering, Data Virtualization, Proportional Computing, Energy efficiency

I. INTRODUCTION

One of the cutting edge technologies is cloud computing. It helps organizations to outsource various IT services like computational, resource planning and data storage services [1]. The efficiency of Cloud computing increases depending on the utility of computing, how the processes are scalable and IT outsourcing of IT. The survey conducted by MacAfee that develops antivirus revealed that the electricity required by the trillions of emails which are spam mails is as much as the electric power required for 2 million houses in USA [2-5]. The green house gases produced by the information transmission of these spam mails is almost equal to the harmful gases emitted by 3 million small vehicles like cars. There is a huge demand for Eco-friendly operations and procedures used in the

Bio-metrics based E-voting system with Aadhar Authentication-Survey

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Abstract—**In India, voting system plays a major rule during elections. Traditionally, India used ballot paper-based voting system, and now over the recent years we are voting through Electronic voting machine popularly known as EVM, which also has some problems like time-consuming, rigging, requires more man -power and less trust-worthy. In order to overcome all these issues, there are lot of techniques or methods being proposed. But one such method, to overcome the above issues is the bio-metrics which is a unique trait or feature of each individual which mainly avoids the illegal voting(rigging). In this paper we propose the concept of bio-metrics based voting system, which gets the bio-metric details of an individual/voter which is entered as input to the system and then compared with the existing data, if match found, the person is eligible to vote and the result is displayed once the election process is complete.**

Keywords—EVM(electronic voting machine), Global system for mobile comunication(GSM), Internet of things(IOT), Election Commission of India(ECI), Liquid crystal display(LCD)

I. INTRODUCTION (*Heading 1*)

India being the democratic country, Elections began to be held from the year 1952, which was ballot-paper based. Since 2000, the Election Commission of India (ECI) has deployed the use of Electronic Voting Machines, which mainly overcame the disadvantages associated with the traditional methods, such as storing, counting and recording of votes. Even though this machine is highly secure and reliable, it requires man-power and also time-consuming process. To increase the accuracy, security and reliability, many techniques are been developed, one such method is the use of bio-metrics. This is the best and cheapest way of identification and verification. Since the Government of India has already issued Aadhar to each and every individual, we can easily verify and make the voters cast their votes without any difficulty, ensuring free and fair elections in the country.

II. RELATED WORK

A. *FingerPrint based method*

In this paper [1] a democratic framework is planned which is safer, efficient and gives two degree of verification by electronic methods, dependent on individual bio-metric attributes of the electors. This framework utilizes the bio-decimal standard for measuring the citizen as confirmation by which at the hour of election whenever checked bio-metric information of the elector, matches with that of stored in the database at that point and afterward, he will be permitted to cast a ballot else he will be dismissed. Bio-metric properties of any individual are one of a kind generally, which can't be coordinated with anyone like unique mark.

The paper [2] person has to give the fingerprint impression twice. One is for enrolling the details of the person before voting and next is required during the voting time. At the time of voting the person has to give the fingerprint impression then it is compared with enrolled data and check whether that person has voted or not. If the person has not voted than the person is allowed to vote and if the person has already voted than the buzzer is initiated to alert the security guards and take action on that person. All the warning instructions and the instruction required to cast a vote is displayed on the LCD. Finally, the result will be announced after completion of voting through IOT. Then the result will be sent as a link through Global System for mobile (GSM) to the registered authorized person mobile number.

This paper [4] manages the web-based voting framework that will impact the voting structure to smart, more secure and easy to vote. This paper shows a system which can be is connected with Aadhaar card. In the entire nation Aadhaar card Number is Unique for each individual and it contains biometric data of every subject. So, it will be useful in disposing of fake Voting. The proposed show has a more noteworthy security as in voter high security secret word is affirmed before the vote is acknowledged in the fundamental database of Election Commission of India. Subsequent to voting client need to cross check their vote then they can affirm with reference of remarkable id, which was created by ECI. In this model a man can likewise vote from outside of his/her allocated Constituency or from his/her favored area. This framework like-wise encourages the live spilling of vote tallies subsequently sparing a colossal time by giving on time result.

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batch - 05

A SURVEY ON IMPLEMENTATION OF AUTOMATIC CHOCOLATE VENDING MACHINE USING IOT

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Abstract—**As world is running towards the new technologies, automation becomes one of the new development in this situation. The automation is based on the process of integrating the software nd hardware together and making the complex process into mple one. As India is one of the supreme example for developing ation, automation becomes one of the technology to enhance India n to a technically developed nation. To reduce the man- power and time consuming process a Automatic Vending Machine is designed using various methods and techniques. Using RFID, Coin acceptor, Finger identification etc., we can accept a better output which is user friendly. In this paper we have provided various concepts or methodological work which uses the above mentioned techniques for the vending machine to dispense the required product.**

Keywords—RFID, Coin Acceptor, PLC, Sensors, Razorpay app.

I. INTRODUCTION (*Heading 1*)

Vending machines are one of the best models for automation development. There are different types of automated vending machines such as vertical and horizontal type using money slot/RFID as an input for the machine. This type of chocolate vending machine saves human energy, versatile in time and saving time. A smart card reader is used as an input sensor. It is st a simple machine which works automatically and sell rious kinds of chocolates or other product. The vending chine has great growth in developed and developing countries around the world which increases the country revenue. Progressively, the vending machine became a wide market in sales and production, and a competition among the manufacturers. It holds many benefits, first in terms of construction, it is very easy to set-up a vending machine as it occupies less space and is compact in size, it is a smart, cost effective driven machine and it can provide distinct variety of product as output for the user.

II. RELATED WORK

Previously lot of researches have done in the area of automatic vending machine. They all follow various technologies for automatic vending machine. They have lot of drawbacks, to overcome this different methods have been used in this paper.

A. *RFID based vending machine(Heading 2)*

In this paper [2], RFID, Coin Acceptor both techniques has been implemented with the use of PLC (G8DDT10). When the user inserts a coin in the coin slot or swipes a RFID card, the IR sensor or the RFID reader detects the signal and this signal has been sent to the PLC. The dc motor switches on with two 12v relays have been used here. Among the two relay, one relay is used to switch on the PLC and the other one is used by dc motor for spring mechanism. Due to the rotation of motor through spring mechanism napkin is dispensed. Once the required number of napkin is dispensed, the machine checks remaining count of napkins available and is updated in the PLC. Once the count reaches present value,the PLC initiates a SMS via GSM module.

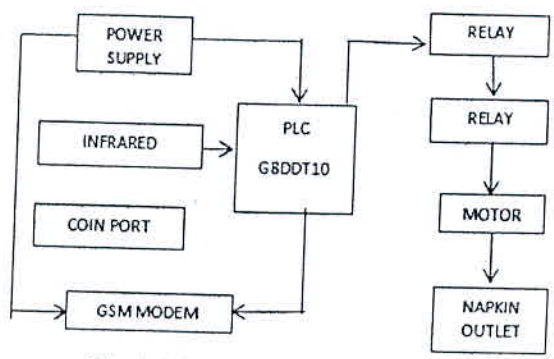

Fig. 1. Napkin dispenser block schematic

In this paper [6], this machine has arduino uno[16-19] in combination with RFID technology. The controller has various point on it to connect any externals like LCD[20], [21], keypad etc. A voltage regulator IC is used to regulate the supply power to a fixed value of 5 volts. In this procedure, initially user has to scan RFID card then after detection of that card by reader card's details like user name, account balance will be displayed by the LCD screen and picture of 3 different products comes at the display screen and also the corresponding price. After selecting one of those products, the machine will provide that product at its output and corresponding amount will be deducted from the card. This implemented machine is reasonable, consumes less energy & simply accessible.

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SMART HOME USING SMART MIRROR

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Abstract— There will never be a finish to gadgets that can be made 'more intelligent' with the assistance of satisfactory innovation. There are many keen showcase gadgets yet reflects give an intuitive climate while showing data. The plan and improvement of a shrewd mirror with extra highlights which give face acknowledgment to security and savvy opening cycle. The substance are shown on a LED screen and covered with a sheet of intelligent a couple of way reflect. The mirror gives essential pleasantries like climate of the city, time, date and news subtleties. In the vast majority of the papers calculation is finished by utilizing raspberry pi. In face acknowledgment procedure, we can distinguish the client's face and confirm the client. This gives a superior security framework through human observing framework and interruption identification utilizing LBP, CLBP, LTP, dynamic LTP methods.

Keywords—Raspberrypi, CNN, LBP, face recognition, emotion recognition

I. INTRODUCTION

In the previous few years, innovation has become significant and unavoidable piece of our every day schedules. With innovation advancing at quick movement, individuals are additionally expected to be more profitable and efficient in their every day exercises. The utilization of advanced mobile phones, tablets, workstations and other comparative gadgets has given individuals devices that assist them with remaining gainful and time-efficient. In any case, as much as the utilization of such gadgets is time-efficient, it is likewise tedious as it has become one more errand on ones day by day plan for the day. Also, time requests (cutoff times) are regularly the primary driver of an individual being feeling the squeeze. Along these lines, great time the board is the way to completing things. This doesn't just apply to ones expert life, yet to their private life also. A **Smart mirror** is a two-path reflect with an electronic showcase behind the glass. The presentation can show the watcher various types of data as gadgets, for example, climate, time, date, and news refreshes. A **Facial recognition** framework utilizes biometrics to plan facial highlights from a photo or video. It contrasts the data and an information base of realized appearances to discover a match. That is on the grounds that facial acknowledgment has a wide range of business applications. It very well may be utilized for everything from observation to showcasing. **Home automation** is the programmed control of electronic gadgets in your home. These gadgets are associated with the Internet, which permits them to be controlled distantly. With home computerization, gadgets can trigger each other so you don't need to control them physically. **Facial emotion recognition** is the process of detecting human emotions from facial expressions. The human brain recognizes emotions automatically, and software has now been developed that can recognize emotions as well..

II. RELATED WORK

A. Smart Mirror

Paper [1], the two main objectives are human monitoring and intrusion detection, the two modes of smart mirror are Normal mode and Triggered mode, in Normal mode the mirror just reflects the object in front of it . In Trigger mode the mirror acts like smart mirror, for triggering action the authentication has to be done, authentication involves to enter username and password once authentication is done the mirror displays temperature, weather, time, date and it also notifies depending on weather to wear jacket or to carry umbrella while going out. Voice command is accepted using microphone, physical touch using GUI and mobile control commands through internet are the three ways through which user can interact. The camera module is fixed on smart mirror if, PIR sensor detects the motion the smart mirror activates Raspberry pi to trigger the camera which starts to record video and converts it into frames. For detecting human the yolo technique with openCV is used. The frames are converted into S*S size grid and further to boundary boxes and class probability map is drawn to identify different objects. Once the intrusion is confirmed or person under monitoring moves out of the site, the alert message will be sent to administrator with registered mobile number. This system reduces time wastage and provides security.

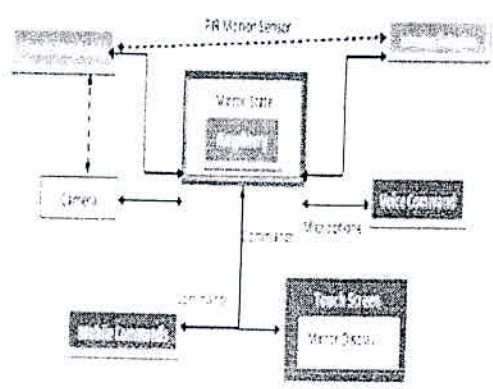

Fig. 1 :Block diagram of smart mirror

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A SURVEY PAPER ON "APPLICATION OF DEEP LEARNING TECHNIQUES FOR THE STUDY AND ANALYSIS OF CARDIOVASCULAR DISEASES"

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ABSTRACT

Cardio Vascular Diseases are group of disorders of the human circulatory system which disturbs the structure and function of the heart and is the number one cause of Cardiac death globally. Any heart conditions that are characterized by the narrowed or blocked blood vessels, structural complications, heart muscles related issues, defected valves, irregular rhythm are termed as Cardiovascular disease. The Cardiovascular diseases include coronary heart disease, cerebrovascular disease peripheral arterial disease, and rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary embolism, myocardial infarction, strokes, congestive heart failure etc.....These heart diseases are becoming one of the leading causes of the death worldwide. This high death rate can be reduced to an extent by detecting various heart diseases in an early stage which help in providing timely treatment to the patients. As per the reports of World Health Organization in 2012, a total of 17.5 million deaths were reported due to cardiovascular diseases worldwide, which accounts for 31% of global death. By 2030 the yearly death rates due to cardiovascular disease are expected to rise to 22.2 million. In 2010, the global direct medical expenses due to CVDs are approximated to be US$863 billion in total. These expenditures due to CVDs continue to rise and may reach US$20 trillion by 2030. Among CVDs 7.4 million deaths were due to Coronary Artery Disease (CAD). This report from various sources reveals the importance of early detection and diagnosis of CVDs which can save most of the lives.

Keywords: Convolution Neural Network, empirical mode decomposition, Cardiovascular disease, deep learning.

I. INTRODUCTION

These survey reports on Coronary Artery Disease (CAD), Myocardial Infarction (MI) and Congestive heart failure (CHF) reveal the importance of early detection and diagnosis of these diseases when compared to other Cardiac abnormalities which can save most of the lives. The automated characterization and classification of Electrocardiogram (ECG) signal to detect these major heart diseases is a challenging task from few decades. People with Cardiovascular disease or who are at high cardiovascular threat (due to the presence of one or more hazard factors such as Hypertension, Diabetes, Hyperlipidemia etc.) need early detection and managing using counseling and medicines, as appropriate. Any abnormality in the heart is reflected in the morphological features of 12 lead clinical ECG signals which is low in amplitude and shows significant variations within it. Clinically the recorded ECG is continuously monitored by the heart specialist to identify heart problems, it is very tedious for the specialist to view huge ECG records and find out the small variations in the morphology of ECG signal in a less time. If CAD left undiagnosed it progress and leads to MI and if MI is not diagnosed on time it may impair the Left Ventricular function. That is if CAD and MI are not picked up by ECG it may lead to CHF. This work aims at developing model under uncontrolled environment which can automatically classify among all three abnormalities – CAD, MI, Cardiomyopathy and CHF using single ECG beat. Outwardly decipher these signals. The computer aided detection system was thus created to aid clinics understand and interpret the ECG signals with speed and accuracy.

II. RELATED WORK

This project uses an advanced adaptive method, Empirical Mode Decomposition as an effective method for removing high frequency as well as low frequency noise components. The data obtained for diseases from different sources have different sampling frequencies. In this project the datasets from different

Survey Paper On Traffic Control Using Smart Road Divider

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Abstract— **Static Road Dividers are used to isolate on-going and incoming traffic on roads. This in turn aids in maintaining the traffic flow. The major drawback with Traditional Road Dividers is that the number of paths or lanes on either aspect of the road is static. During peak hours, emergency vehicles stumble in traffic failing to reach the destination in time resulting in fatal consequences. The collective impact of the fuel and time that may probably be saved by adding a minimum of one further lane to the direction of the rush is significant. Here, a methodology is put forth that formulates an automated road divider mechanism that shifts lanes, so that the number of lanes with in the direction of the rush can be increased.**

Keywords— Static Road Divider; traffic flow; peak hours; emergency vehicles; automated road divider

I. INTRODUCTION

A lot of Countries all over the World are going through the difficulties of Traffic Congestion owing to an increase in automobiles. Regardless of the quantity of vehicles, the Road infrastructure is nearly unchanged that isn't ready to cope up with the changes like uncertain travel delays, blockage of busy roads and accidents. The major issue with traditional Road Divider is that the quantity of lanes on either aspect of the road is static. There's a notable increase within the variety of cars on road as population at the side of the quantity of cars per family is increasing and additionally the resources are restricted. Managing the road traffic has emerged as a severe downside in ndy situation. There are plentiful situations where an Nursing automobile gets stuck in traffic and needs to watch for few minutes to hours to flee from the traffic jam which could conjointly place the patient's life in danger. Widening the surface of road and increasing traffic jam has harsh environmental problems like traffic jams, traffic jam, serious pollution and connected health issues. Congestion in traffic in due course ends up in slow speeds, that will increase the time of travel and stands out collectively of the main problems in metropolitan cities.

As stated by a survey report, the major reason for the accidents on road are due to driver's negligence. The report states that the percentage of accidents because of rash driving is extremely high compared to the accidents because of alternative causes. In highways overspeeding is the main factor that cause accidents. To avoid paying the fine for over speeding, people many times dodge the traffic police and also try to offer bribe. All these can be avoided by using the RFID System. RFID uses radiofrequency to identify objects. An RFID tag is attached to each car. These tags will contain information which is stored electronically. Two ultrasonic sensors will be placed on the starting and the end point of the road to measure speed. If the driver crosses over speeding limit, RFID reader reads and captures information stored on the tag attached to the vehicle, deduct fine and send an alert message through Wi-Fi.

The major concern of the planned work is to upgrade the traditional traffic congestion problems to new era by solving the problems faced, to manage density traffic and to scale back the time of travel throughout peak hours for a far better and smarter answer for the aforesaid traffic issues.

II. RELATED WORK

[1] In this paper, a demo model of 'Controlling of traffic using Ultrasonic sensors' is designed and developed. The problem focused in this paper is to implement moveable traffic divider, as a congestion release strategy for metropolitan areas in place of traditional solution of widening the roads. The moveable traffic divider helps in the regulating the road capacity, so as to attain optimum benefit by using on the existing road itself. The chances of occurrence of traffic will be more with static divider (Fig. 1). In the existing system for the free flow of traffic heavy machines like zipper machines, barrier transfer machines are used for the movement of road dividers, Using these machines a whole stretch of dividers is used to move either left or right based upon the traffic density, as shown in (Fig. 2). Since it is a demo model, it is only shown it through one way of traffic using ultrasonic sensors. The traffic congestion data from the sensors is given to the nearest traffic control room using a Wi-Fi module. The data from the sensors is updated automatically. But in real time traffic congestion can be in more than one direction, this module can be used then by using image processing rather than the basic sensors. The main disadvantage of this project is it is time consuming process and not flexible.

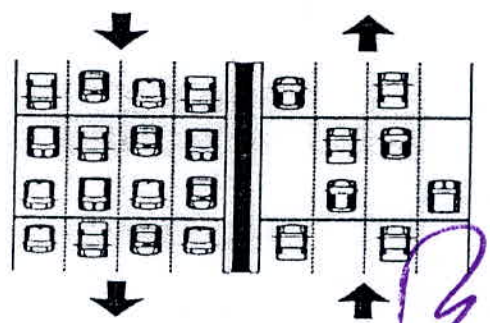

Fig.1 Road with Static Divider

Design and implementation of FPGA based vending machine for integrated circuits(IC's)

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***Abstract*— Over the years, there has been a drastic evolution in Vending Machines, from a simple "convenient unmanned shop" to a station providing several services in various domains. Among its various advantages, some are listed as follows portability in terms of its set up, being low cost-driven, and offer a wide reach due to less consumption of space. The proposed project, includes IC bifurcation, testing and vending out of customer desired IC's. The intended design is implemented on a Spartan 6 FPGA development board using Verilog programming and simulated using Xilinx software. FPGA based devices consume less time, allow rapid prototyping, are flexible, reprogrammable and also reduce hardware, while there are any changes made. Use of such technologies saves time, power and cost. Segregates and does the functional verification of IC's, thereby lending a helping hand to the lab attendees and also ensuring the use of functional IC's by students in experiments.**

***Keywords*— vending machine; IC vending machine.**

I. INTRODUCTION

A vending machine is defined as an automatic machine that provides numerous products such as snacks, cigarettes, beverages and lottery tickets to consumers after an amount is deposited via cash or card, or a specifically designed token is inserted into the vending machine. The major concern of the ongoing project is with regard to the manpower, time spent on IC segregation and delay in outputs of experiments due to defective IC's. Based on the literature survey conducted the vital enhancements are segregation and verification of IC's. The utilization of colour sensors and FPGA controlled robotic arm facilitates the preferred objectives. Dumped IC's are arranged over a motor-driven conveyer belt, and further segregated using colour sensors, on the user's demand each IC is tested and vented out, respective to token inserted, this project also enables user desired cancellation. On mismatch of the token, tokens are returned. Thus making the device user-defined and service-oriented. FPGA based machines are less time consuming, allow rapid prototyping, flexible, programmable and reduces the usage of multiple hardware as it is reprogrammable.

II. LITERATURE SURVEY

A brief overview of the surveyed papers are as follows. different techniques such as PLC, data acquisition and pneumatics, HTML, javascript, IoT technology, HS-SPME-GC-MS are used. Migration of the compounds from various types of cardboard-cups used in vending machines for coffee was performed and suggested that printed cardboard -cups can be used but some of the compounds found were not authorized to be utilized in food packaging materials as they may lead to dietary Cramer– threshold exceedance. Various inputs required to make the machine function efficiently was the main focus of the design of a control system for a vending machine by introducing PLC technology which lead way to flexible payment methods. Implementation of the control unit with an additional module for interaction with the user was the main feature of vending machine management based on IoT platform. The design and implementation of a reverse vending machine which had features such as of low weight, small size and pocket-friendly price were developed using data acquisition and pneumatics. Safety and security of the machine are based on fingerprint sensing and the alarm system was a new advancement in the vending machine which paved the way for the design of a high – tech vending machine.

The utilization of CMOS, SED, microcontroller technology although contribute to less power consumption, depicts a limitation in speed and efficiency of the vending machine. This is further evolved through the usage of an FPGA development board. In the projects such as low power implementation of FSM based vending machine on FPGA, design and implementation of automatic beverages vending machine and its performance. Evaluation using Xilinx ISE and cadence, where FPGA is used, the major limitations addressed is a limited lookup table.

Some vending machine uses RFID technology, it is user friendly, affordable, less power consumption but the disadvantage is this vending machine can only read RFID tag. The vending machine can be based on ARDUINO technology it reduces the problem of giving balance amount, consumes less power but the disadvantage is this vending machine cannot differentiate real coin and fake coin. Even vending machine can be developed using HTML, javascript to dispense a variety of products at the same time but this vending machine is not recommended for mass production.

Mainly vending machines are designed to reduce the workload for humans like in coffee shops, it will be difficult for workers to prepare and give coffee for each person and doing billing at a time so for this, unmanned coffee vending machine is designed using technologies like ARDUINO, IDE and IOT to reduce the workload and there is no need for a person all the time to stay near a machine, but the main disadvantage of this type of machine is that it is time consuming, some vending machines are designed using other technologies also like multinomial logic model, UNO, Java to ensure various benefits to future generation some vending machines are also designed

A survey paper on "Design of Low power 3-bit Flash ADC in 180nm Technology Using Cadence Design Tool"

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Abstract—Data convertors play an important role in an ever-increasing digital world with wide variety of applications. Data convertors like ADC and DAC in which ADC (Analog to Digital) is an important device having huge applications in present digital world. There are different types of ADC like SAR, Flash, Pipelined ADC. One among them is Flash ADC which is also called as Parallel ADC has a high speed Flash ADC is proposed. It consists of an (2^N-1) comparator, a voltage divider network (2^N) and a Priority Encoder. Here a Dynamic comparator is used because of its low power dissipation of some micro watt. The main aim of proposed project is to minimize the power dissipation and to have less delay. The design of 3-bit Flash ADC in 180nm technology is implemented using Cadence software tool.

Keywords— Analog to digital, Flash ADC, Dynamic Comparator, Encoder.

I. INTRODUCTION

In today's modern electronics system ADC has become a key component. All the signals in the universe is measured using the analog, which has infinite set of occurrences. In order to overcome this, a digital component is designed which finite has set of occurrences. To convert ny analog signal to a discrete signal or discrete to analog signal data onverters are used. There are different types of data converters namely ADC and DAC. As there is advancement of technology, a most widely used digital component is ADC. ADC is a system which converts a continuous-time and continuous-Amplitude analog signal to a discrete-time and discrete-amplitude digital signal. As the resolution increases the ADC become more complex in its conversion and circuit. Fig1. shows the general block diagram of the practical ADC consisting of analog signal as an input signal. Antialiasing filter is used to prevent the aliasing of the input signal. Sample and Hold circuit are used to track and hold the analog input to a constant value. The sampling is done with the sampling rate greater than two times bandwidth of signal that is fs=2fm. Flash ADC quantizes and convert discrete signal to digital signal.

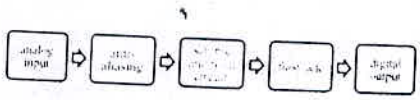

Fig1.Block diagram of ADC

II. LITERATURE REVIEW

In 2012, 5-bit flash ADC, encoder designed using pseudo dynamics CMOS logic and bubble error is removed by implementing the gray code encoder for Low power dissipation sampling frequency-5GS/s)[3].In order to obtain low power consumption an inverter comparator is made to "Stand-by" mode which is not effective during a single conversion[4]. In order to have less area, open loop comparator is used and dynamic encoder is designed for a less static power dissipation and high speed. In the same year for an SOC application dual mode operation and threshold voltage are employed and this architecture is designed in both micro and macro design level like TIQ and multiple selection method to reduce static and dynamic power [5,6]. Power gating techniques can be used to reduce the leakage current and average power in stand-by mode [7]. Among all the comparator designed, Double-tail comparator with reduced leakage has a less delay and low power. In the same year energy efficient flash ADC can be achieved based on a comparator constructed using domain wall motion in a magnetic strip and MTJ [8,9]. The no. of comparators used results in the more area consumption. In order to reduce the comparator, a multiplexer is used where pre-amplifier in the comparator is removed so that it doesn't consumes more amount of extra power to drive input capacitance [10]. A 4-bit flash ADC 45nm is designed for low power consumption [11]. Encoders can be used in application like a watermarking chip both visible and invisible watermarks in DCT module for low power optimization [12]. A 3D flash ADC used in high speed communication application to eliminate switching noise of 2D and decrease silicon area, increase power efficiency [13]. So, in 2020 paper all the comparator is designed and verified where open loop comparator has high operating frequency and TIQ has low power consumption [14].

In this paper we used Dynamic comparator which has a low power dissipation and less delay. And also used encoder to get a digital output. The power dissipation which is the main disadvantage of the flash ADC is reduced compared to the previous paper. This design is implemented in the 180nm technology using cadence virtuous tool.

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Smart Lawn Mower Using Solar

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Abstract—As world is running towards the new technologies, automation becomes one of the new development in this situation. The automation is based on the process of integrating the software and hardware together and making the complex process into simple one. As India is one of the supreme example for developing nation, automation becomes one of the technology to enhance India in to a technically developed nation . The aim of our project is to build a lawn mower which uses solar power and hence we can save electricity. In our project various operations of lawn mower are controlled by microcontroller . Obstacle detection can also be done with the help of obstacle sensor . Lawn Mower is manually controlled by remote and it does not require any skills and can be operated by a common man.

Keywords— Blades , Solar Panel , Pesticide Sprayer , Moisture

I. INTRODUCTION

The Solar Lawn Mower has solar panel fixed on top of model in such a way that angle of inclination is 45 degree and hence solar radiation of high intensity can be received. Solar energy is converted into electrical energy by Solar panel. The battery stores the converted electrical energy. Connecting wires connect the motor and battery. The electrical energy is used by cutting blades which rotate and cut the grass. Pesticide sprayer or sprinkler also uses the energy and sprays the pesticide or water.

II. RELATED WORK

[1] In this paper, an autonomous field cutting system is projected. The system is a solar steam-powered garden tool that have enough power to work itself. The system is equipped with 24 iridescent solar cells on prime of the system platform. The system operates on principle of Lawn Ranger except it uses a cable at a lower place the surface of a human lawn. The grass cutter uses this wire along side its sensors to permit the mechanism to maneuver around . The system can still operate as long because the garden tool has energy from the sun. it's advantage of cutting grass within the variety of mulch thus we do not need to use the grass catcher .

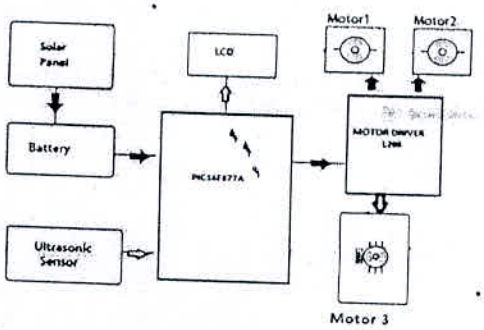

Fig. 1 Automatic grass cutter

[2] In this paper, a manually controlled grass cutter is proposed.The grass cutter convert the solar energy into electrical energy with the help of solar panel which is mounted on the platform of system. If 12v battery is discharged then it can be charged by using AC supply. These battery is then connected to RF module and the RF module is then connected to both DC motor. RF module function is to supply the electricity to motors with the help of relays. RF module receive signal through microcontroller and it supply electricity accordingly to that motor.Then these motor is connected to wheel by gearing mechanism and thus wheel rotates. Due to these rotation of cutter the grass is cut and collected in collecting box.

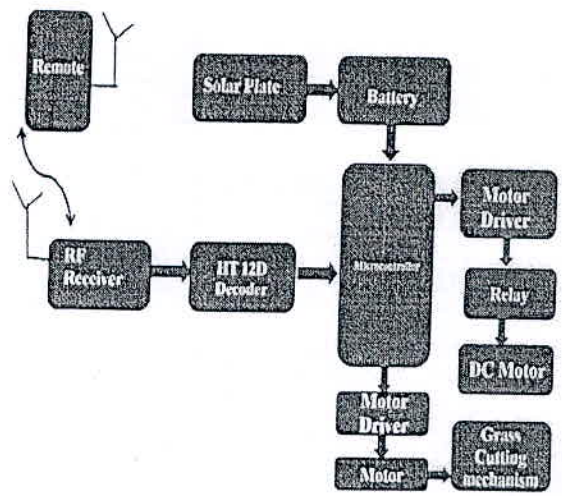

Fig. 2 Remote controlled grass cutter

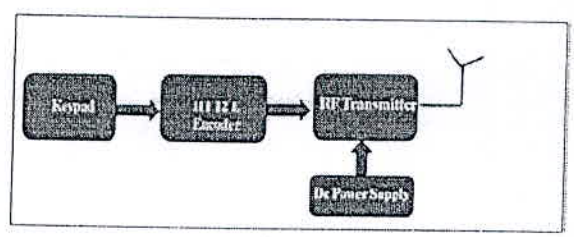

Fig. 3 Block diagram of transmitter

[3] In this paper, an automatic solar grass cutter is projected. It uses DC 12V 7.5AH battery provide to control whole system. This battery is connected with solar array. therefore solar power is employed to charge this battery. This method has four DC motors to that four wheels square measure connected and also the blades for grass cutting square measure connected at the front facet of this method. To operate this method the affiliation should be established between this

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Recent Trends in Electrical, Electronics, Telecommunications, Instrumentation, Medical Electronics Engg. & Physics

A survey paper on "An approach towards reduced switch 7 level multilevel inverter by PWM method"

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Abstract—Multilevel inverters have gained more popularity in various industrial applications because of its advantages in high power and high voltage applications with less Total Harmonic Distortion (THD) The inverter proposed here is suggested in the area of medium or low voltage applications. The circuit uses lesser amount of switches compared to other traditional multi-level inverter topologies and generates 7-level alternating current AC output voltage. The resulting output waveform is in form of quasi square-wave, which is close to a sinusoid waveform with reduced harmonic distortion. The harmonic content can be reduced by the Pulse Width Modulation (PWM) strategy. Due to the usage of lesser amount of switches the complexity is reduced and circuit becomes cost effective. This proposed model offers advantages of less component count, reduced switching loss, low cost and less harmonic distortion.

Keywords—Reduced switches; Total Hormonic Distortions (THD); Pulse Width Modulation (PWM)strategy.

I. Introduction

Inverters are basically utilized for commercial and industrial purposes. Multilevel inverter is being broadly acknowledged for high power and voltage applications. Inverters are predominantly sorted as: Three phase inverters and Single phase inverters. Each sort can uses restrained turn On and Off circuit elements. Example: bipolar junction transistor [BJTs], metal oxide semiconductor field-effect transistor [MOSFET]. For generating an alternating current (AC) voltage, these inverters largely utilize PWM pulses as control signal. Inverters can again be sorted into Voltage-fed-inverter (VFI) and Current-fed-inverter (CFI).If the applied current is kept constant then this type of inverter is called current fed-inverter (CFI).If the applied voltage is constrained to be constant then this sort of inverter is known as voltage-fed-inverter (VFI).

I. MULTI LEVEL INVERTER

Multi level inverter is power electronics device which produces desired output voltage from the few DC voltages. Batteries, fuel cell, sun powered cell, wind turbines etc are utilized as DC voltage sources. The fundamentals of MLI is to produce small voltage steps using semiconductor elements as switches .

WORKING:

Let us consider a basic two-level Inverter, it makes dual distinctive voltages for the load. If Vdc is given as input to a 2- level inverter at that point it will give + Vdc/2 and – Vdc/2 on yield. AC voltage is constructed by switching between these two levels.

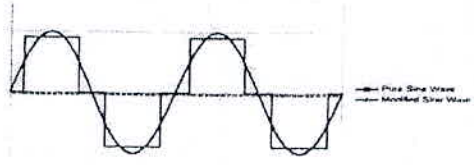

Fig 1: Two level inverter

In spite of the fact that this strategy of producing AC is viable but it has few disadvantages because it makes THD within the output voltage conjointly incorporates a high volts per second increase or decrease dV/dt. Regularly this strategy works but it cannot be used in where low harmonic distortion in the yield. In multilevel inverter we do not deal with

A SURVEY PAPER ON 8-bit, 16-bit AND 32-bit MULTIPLICATION USING VEDIC MATHEMATICS

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Abstract— The important arithmetic operation used in major processor is multiplication. Hence, the proposed paper concentrate on increasing the speed of multiplication using the vedic multiplication algorithm. Vedic Mathematics mainly consists of 16 sutras; this multiplication algorithm is designed by using Urdhava Tiryakbhyam sutra. The Multiplier Architecture is based on the Vertical and Crosswise algorithm of ancient Indian Vedic Mathematics. Vedic technique eliminates the unwanted multiplication steps. This reduces the propagation delay in processor and hence reducing the hardware complexity in terms of area and memory requirement. In this proposed multiplication algorithm, time delay will be less compared to other algorithms. Vedic multiplier is coded in VHDL and synthesized and simulated by using Xilinx ISE.

Keywords— Urdhava Tiryakbhyam; Vedic Mathematics; VHDL; Xilinx ISE

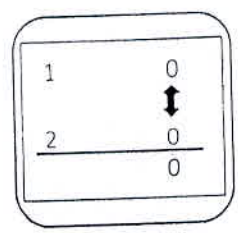
I. INTRODUCTION

Multiplication is a very essential arithmetic operation and extensively used in microprocessors, microcontrollers and digital signal processors. It is a time consuming operation because it takes more time and clock cycles as compared to other arithmetic operations. There are number of multiplication algorithms proposed in literature which include array, booth and Vedic algorithms. It is found from the various proposed architectures in literature that Vedic multipliers are faster than non-Vedic multiplier architectures. Different architectures have been proposed in literature to improve the efficiency of multiplication using Vedic mathematics. These architectures are based on conventional Vedic, Vedic using ripple carry adders (RCA), Vedic using addition tree structure and Vedic using carry save adder (CSA). Gupta et al proposed architecture for conventional Vedic multiplier. The drawback of conventional Vedic architecture is that it works fine at 2-bit level but when the order of multiplier is increased, it becomes more complex. Pushpalata and Mehta proposed an enhanced architecture for Vedic multiplier. The drawback of this architecture is that it uses three stage ripple carry adders that increases combination path delay. Ganesh and Chrishma recently proposed a new architecture for Vedic multiplier using CSA. It uses carry save adders instead of ripple carry adders. The drawback of Vedic using CSA architecture is that it uses 2 carry save adders for adding partial products and second adder is not fully utilized. Hence, here a new architecture for Vedic multiplier is proposed which is more efficient in terms of both cost and speed.

II. OVERVIEW OF VEDIC MULTIPLIER

Vedic multipliers are based on Vedic mathematics. Vedic mathematics has number of multiplication methods. The Urdhav-Triyakbhyam method is one of them. Urdhav-Triyakbhyam means "vertically and crosswise". The steps are as below.

STEP 1: Start from right and multiply vertically from right only and save the results



Synthesis of nano sized TiO_2 particles for resisting the growth of microbial consortium in various applications.

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Abstract:
In this experimental study, the impact of antimicrobial activity of nano sized Titanium oxide ($nsTiO_2$) particles on microbial consortium has been analysed under batch conditions. The antimicrobial activity studies were carried out by ($nsTiO_2$) which has been prepared by varying pH conditions. In addition to that, the structural and thermal property of the nanoparticles were tested by using UV spectrophotometer, FTIR, XRD and Thermogravimetric analysis. From the obtained result, the characterization studies confirmed the size of synthesized nanoparticles, band gap, and degradation temperature of around 40 nm, 3.74 eV and above 1000℃ respectively. Moreover, the efficacy of antimicrobial activity of ($nsTiO_2$) particles were depicted by suppression of growth rate of *Pseudomonas aeruginosa* with respect to the function of time.

Keywords: Titanium oxide, Anti-microbial activity, Nanoparticles, *Pseudomonas aeruginosa*, XRD.

1. Introduction

Due to toxic effect and the increasing of resistance towards certain antibiotics, the scientific community move towards developing or synthesizing of in-organic antimicrobial substances such as pure metal salts and metal oxide nano-particles. The metal oxide has a significant property to resist or inactivate the activity of microbial DNA, restricting bacterial replication, hindering the activity of metabolic enzymes in electron transport chain. There are several metal oxide nanoparticles namely Zinc oxide (ZnO), Manganese oxide (MgO), Titanium oxide (TiO_2) and Iron oxide (Fe_2O_3) which are extensively used as an antimicrobial agent due to its physiochemical properties in the application of biological domain. But TiO_2 has an excellent semi conducting, higher resistance to chemical corrosion and higher antimicrobial and antifungal property among the other nanoparticles. In addition to that, TiO_2 nanoparticles has higher surface area to volume ratio and non-toxic in nature [1]. Generally, the antimicrobial activity of nanoparticles is influenced by several inherent properties such as morphology, size, chemistry and nanostructure. Moreover, the antimicrobial activity of nanoparticle also depends upon morphological, structural and textural properties. According to the structural property, the titanium oxide nanoparticles exhibit various crystalline polymorphous phases such as anatase, rutile and brookite [2]. Several literatures stated that, the anatase phase has more antimicrobial activity than the other phase due to the formation of hydroxyl free radicals during photochemical process. In this research work, we mainly concentrated on study of the

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SYNTHESIS AND CHARACTERIZATION OF POLYPYRROLE BY CHEMICAL OXIDATION OF PYRROLE IN AQUEOUS $FeCl_3$ SOLUTION

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Abstract:

Conductive polymer, polypyrrole (PPy), was synthesized by chemical oxidative polymerization technique by using pyrrole monomer (mPPy) in aqueous solution with oxidizing solution of ferric chloride ($FeCl_3$) . Polymers with conjugated pi- electron (i.e.system have C=C conjugated bonds) backbones display unusual electronic properties such as low energy optical trasition,low ionization potentials, and high electron affinities. The produced PPy samples were characterized by using different techniques such as the UV-VIS and IR spectroscopy, differential scanning calorimetry (DSC), X-ray diffraction (XRD), and scanning electron microscopy (SEM).

Introduction:

Polypyrrole, a chemical compound formed from a number of connected pyrrole ring structures is an inherently conductive polymer due to interchain hopping of electrons. Polypyrrole is easy to prepare and its surface charge characteristics can easily be modified by changing the dopant anion (X^-) that is incorporated during synthesis. Polypyrrole was the first of conducting polymers that shows relative high conductivity[2] .

Polymerization occurs readily in the presence of different oxidants, such as $FeCl_3$ and $K_2S_2O_8$. More studies have been reported about the formation of PPy films on solid surfaces by chemical polymerization of pyrrole . There are reports about the polymerization of pyrrole onto printed circuit boards and various textile composites . In the present work, the conducting polypyrrole (PPy) films were synthesized by chemical oxidation of pyrrole with $FeCl_3$ in aqueous methods by mixing a solution of pyrrole with an oxidizing solution of $FeCl_3$.[2]

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Synthesis of yttria stabilized zirconia by combustion method and characterization

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Abstract

Nano-sized 8 mol% yttria stabilized zirconia (YSZ) powders were synthesized by the combustion method using two different fuels (urea and glycine). The effect of the nature and amount of the fuel was observed on the phase structure, particle size and microstructure of the resulted YSZ ceramics. This behavior is closely related to the combustion flame temperature. The elevated temperature during combustion synthesis with urea and glycine favored the formation of large aggregates, instead of loose and porous particles. As a consequence, the good result in terms of densification was formed for the pellets prepared by sintering of powders synthesized powder.

Keywords: A: Powders: chemical preparation; B: X-ray methods;

INTRODUCTION

Zirconia (Zr) nanoparticles have been reported to have unique properties such as excellent refractoriness, chemical resistance, good mechanical strength, highionic conductivity, low thermal conductivity at high temperature together with relatively high thermal expansion coefficient and good thermal stability [1,2]. A wide-rangingindustrial application including fabrication of dense ceramics, sensors, batteries, capacitors, corrosion resistant and thermal barrier coatings, solid electrolytes for fuel cells, catalysts, etc. have been established [3,4]. A high-quality starting powder is a prerequisite to obtain a high-performance zirconia material. There are various methods for synthesis of high-quality oxide powders; among them are precipitation techniques [5, 6], combustion techniques [7–9], sol-gel techniques [10, 11], and hydrothermal techniques [12]. All these deferent techniques are based on a solution type chemistry, where precursors of the various cations are dissolved in a solvent, commonly water, and then mixed in appropriate proportions.

Combustion synthesis is another promising route for the synthesis of nano powder. This synthesis route is simple and faster method. This process starts at low temperature, with the help of an external heating source, followed by subsequent exothermic reaction between the oxidizer and fuel; this exothermic the reaction provides necessary heat to further carry out the reaction in the forward direction to produce nanocrystalline powders as the finalproduct. Several organic fuels such as urea, glycine, oxalyl dihydrazide, sucrose, glycine nitrate, urea-formaldehydehave beentried to synthesize nano-ceramic powders [13-17]. Solution combustion synthesis is a quick and easy process, with as main advantages the saving of time and energy. This process is used directly in the production of high purity, homogeneous ceramic oxide powders. This method is versatile for the synthesis of a wide size range of particles, including nanometer size alumina powders, as reported by Patil and Mimani [8].

"Nanomaterials" possessing 1-100 nm grain sizes have unique chemical, physical, optical and mechanicalproperties. Because of these properties, they are useful as sensors, catalysts, coating materials (modifiers of surface properties) and miniaturization of devices (IC chips) [18]. For example, nanosized alumina or ceria having large surface/volume ratio are used as catalyst supports, t-ZrO-Al_2O_3 is a well-known toughened ceramic (ZTA) [19], yttria stabilized zirconia (YSZ) is a solid electrolyte [20] and $CeO2$-ZrO_2 oxygen storage capacitor (OSC) [21]. The dispersion of nanoparticles in various fluids allows the preparation of magnetic fluids (γ-Fe_2O_3), fabrication of thin film (sensors) and antireflection /

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Phenothiazine as a class of Heterocyclic Pharmacophore and its Antimicrobial studies.

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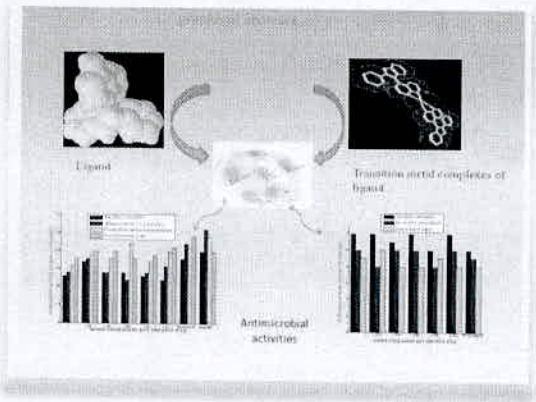
Abstract-Phenothiazine in different formulation as injection and tablet as an antipsychotic drug used in several biological treatment applications in this view some of the phenothiazine class of drugs quantitatively estimated and evaluated for their antimicrobial studies by selected bacterial and fungal strains by disc diffusion method and comparative activity studies made on the basis of structural reactivity.

Keywords: *phenothiazine, heterocyclic moiety gram positive bacteria, gram negative bacteria.*

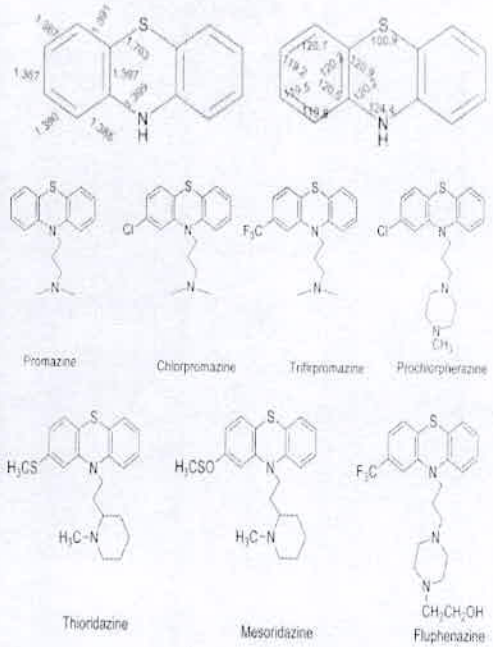


I.INTRODUCTION

Heterocyclic compounds are the important pharmacophore and their study of importance started 50 years ago, the important structural reactivity and their systematic studies also plays a important role in the field of medicine, biochemistry and agriculture[1]. Phenothiazine as a class of heterocyclic molecule also known as anti Psychotropic, anticholenirgic and antihistamine class of drug. The word drug derived from drogue which means a dry herb, a drug may be a single chemical substance or a combination of two or more different substances and Solubility of compounds to make the simplicity of the synthetic scheme helps to understand influence of oxidizing agent in the quantitative estimation of drugs [2]. Phenothiazine class of drug such as trifuoperazine hydrochloride plays an important role in chemotherapy and they are the part of aromatic ring system fused with imidazole five membered ring systems [3]. Phenothiazine and their derivatives have diverse application in coordination chemistry, medicinal chemistry.

II.STRUCTURE

Phenothiazine is a parental phenothiazine class of drugs and thiazine dyes, substituted phenothiazine class of drugs are the important class of psychiatric drugs owing to their pharmacological activity, they have been extensively studied for the application of chemical, biological and medical research.2- and 10- substituted class of phenothiazine drugs are particularly used in the treatment of anti psychotropic, anticholenirgic and antihistamine [4-8].



III.MATERIALSANDMETHODS

All chemicals used were of analytical reagent grade. Distilled water was used in the study.

Potassium Bromate solution (0.003M):- prepared by dissolving 0.501g of potassium Bromate (s.dfine-chem. Ltd. India.) in distilled water and diluting to one liter with the same solvent.

Sodium thiosulphate solution (0.05M):- prepared by dissolving about 8.26g of the salt (S.d fine-chem. Ltd. India) in distilled water and diluted to one liter with the same solvent and standardized using pure sample of dichromate.

Hydrochloric acid (3M): prepared by diluting about 265.5 ml of concentrated hydrochloric acid (s.d fine-chem. Ltd India.) to one liter with distilled water.

Indicator: - dissolved about 1g of soluble starch in 100ml distilled water.

Potassium Bromide solution (10%): dissolved about 100g of potassium bromide (s.d. fine-chem. Ltd India.) in 1000ml distilled water.

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Ground water study of the Physico-Chemical parameters in the Kunigal Taluk.

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Abstract:

Current Study is deals with assessment of Waterquality of the Huttridurga (H) Kunigal (T)Tumkur (dist).The investigators collected 12 samples from different 12 villages in the Huttridurga (H) and measured pH, Electrical Conductivity, Total Dissolved Salt (TDS),Total Hardness,Alkalinity,Chloride,Calcium,Mg^{+2},Na^{+} K^{+} ion concentration which was analysis withreference to BIS.

Key Words: **Water quality, ground water, hardness, hobli, Karnataka**

I.INTRODUCTION

Water is essential for the existence of any form of life. Natural Water normally contains dissolved gases and solids. The quality of water that we consume as well as the quality of water in our lakes, river and streams occurs as an important variable in finding the overall quality of our lives. In urban and rural areas, the ground water is the chief source of drinking. Greater than 80% of diseases of mankind is due to the contaminated water (WHO 1984), Dev Burmanetal (1995) and Subba Rao (2003). The quality of water is a consequence of its natural, physical and chemical state of the water as well as consequence of human activities (S Venkateeswaran et.al 2011).

In the present investigation, the ground water samples were collected from 12 different villages and were examined for physico-chemical parameters like temperature pH,EC,TDS,Total Hardness,Ca^{2+}, Mg^{2+},Na^{+} K^{+},$Cl^{-}$and Total alkalinity.

II. STUDY AREA

Huttridurga hobli is located in the Kunigal (Taluk) of Tumkur (district), Karnataka, India at 13.02^{0} North latitude and 77.03^{0} East longitude. The hobli is in the region of Deccan plateau. It is situated 773meters above the sea level, it has an average rainfall of 680 mm per annum. The study area is surrounded by industries like Tiles, Brick, pharmaceutical and agriculture is the main occupation of the society.

III. MATERIALS AND METHODS

During the post monsoon season, twelve ground water samples of different villages of Huttridurga hobli were collected for the study. The samples were collected using pre cleaned polyethene cans of 5 liters capacity. All the cans were rinsed with water to be sampled before the sample collected for analysis. All the samples were transported to the lab with precautionary condition as mentioned in the APHA (1998).The physical parameters like temperature, pH and EC were analysed on spot using water analyser 371 instrument of Systronics make. The TDS was analysed by the evaporation method. The chemical parameter such as total Hardness and Ca^{2+} is determined by EDTA method, Alkalinity and $Cl^{-}$was determined using methyl orange indicator and argentometric method respectively, Mg^{2+} wasdetermined using calculation method, the

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TEMPERATURE DEPENDENT TRANSPORT PROPERTIES EU^{3+} DOPED BORATE BASED TELLURITE GLASSES

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Abstract - **The DC conductivity of Eu^{3+} ions embedded in lead boro-tellurite glasses has been accomplished as a function of temperature in the range of 343 to 483 K. The Cole-Cole (Impedance) plots of glasses contained only one perfect semicircle at different temperatures. This realizes the material's conductivity which presumes an ideal Debye type relaxation. In the Cole-Cole plot at 483K, the semicircle is well defined and fitted into an equivalent parallel RC circuit. The DC conductivity exhibits the Arrhenius behavior and compositional dependence. The DC activation energy (E_{dc}) was estimated for all samples by using linear regression analysis. The values range from 0.202 to 0.231 eV.**

Keywords –Lead boro-tellurite glasses; Europium Oxide; Cole-Cole graph; DC conductivity.

I. INTRODUCTION

It is well known that oxide glasses comprising alkali ions like Li^+, Na^+, and K^+ are fundamentally solid electrolytes, and current is conceded by moderately mobile alkali ions [1-4]. The presence and movement of alkali ions in glasses are most significant, not only due to their chemical durability and ion exchange kinetics but also because of its electrical conductivity. The review of the literature revealed that in the present era, considerable research is on-going on boro-tellurite glasses due to their extensive diversified applications in the field of optoelectronics, solid-state laser, optical amplifiers, optical device, and solid-state electrolytes [3-6]. These applications are specifically due to the unique properties of boro-tellurite glasses such as high transparency, high refractive index, relatively low phonon energy, slow crystallization rate, good mechanical strength, and long durability. Further, these glasses show good infrared transmission and less hygroscopic as well [5-8]. The electrical conductivity originated from polaron hopping can be identified in transition metal oxides (TMO) implanted glasses, and the ionic conductivity can be acknowledged in alkali doped glasses. PbO as both glass former and network modifier can give stable glass with low rates of crystallization [9,10]. The rare-earth ions embedded in glasses affect the conductivity in them. The europium trioxide embedded glasses find their desirable applications in solid-state laser, optical amplifiers, display due to their sharp emission bands in visible and near-infrared regions [11,12]. The glasses exhibit enhanced mechanical strengths and moisture resistance with the addition of alkali oxides such as Na_2O and Li_2O. Na_2O is used to convert BO_3 triangular units into BO_4 tetrahedral units and hence makes structure more compact, which in turn leads to development in mechanical strength. Dielectric and structural studies on alkali oxides and heavy metal oxide ions doped borate glasses are reported in references [13-15]. Until now, only few transport property studies on alkali boro-tellurite glasses activated with Eu^{3+} ions are reported by others[1-3]. Therefore, in this paper, transport property studies have been investigated, and results are reported.

II. MATERIALS & METHODS

By using H_3BO_3, Na_2CO_3, PbO_2, and Eu_2O_3 chemicals as starting materials, the decided lead boro-tellurite doped with europium oxide glasses were made-up through the conventional melt quenching method. All the chemicals were Analytical Reagents (AR) grade and were utilized straight away without any refinement. The homogenous mixture of precursors was taken into crucibles as per the stoichiometric amounts. The porcelain crucible was kept

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Photoluminescence Studies of Strong Red Emitting $CaAl_2O_4:Eu^{3+}$ Nanophosphor for Display Applications

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Abstract: **Novel $CaAl_2O_4:Eu^{3+}$(1-9 mol%) Nano phosphors were fabricated by ultrasonic Sonochemical method where bio sacrificial fresh lemon juice is used as a fuel. The monoclinic phase in all samples is revealed by PXRD profiles. Morphologies of the NPs were mainly dependent on Eu^{3+}, lemon juice, Sonication time, pH and sonication power. The Photoluminescence measurements exhibit sharp peaks at ~ 577, 588, 615, 654 & 702 nm, related to $^5D_0 \square ^7F_J$ transitions respectively. CIE chromaticity diagram shows orange to red region of the phosphor. The dipole-dipole interaction between the activator ions leads to concentration quenching. These findings confirm that the prepared Nano phosphor might find an application in White Light Emitting Diodes and Display materials.**

Keywords: ***Bio-inspired; Sonochemical route; Photoluminescence; LED.***

INTRODUCTION

The combination of Nanoscience and nanotechnology, particularly the emergence of engineered nanoparticles results in most promising development of devices in variety of fields like photonic materials, field emission displays, Nano electronics, biomedical, biological and chemical probes, light emitting and laser diodes [1-2]. Luminescent materials exhibit various applications and drag the attention of research community, due to their noticeable doping capability, thermal stability, spectroscopic, physical, chemical and structural properties [3]. White light emitting diodes (WLED's) are replaced by incandescent and fluorescent lamps for higher energy efficiency, small size, short decay time and environmental protection [4-5]. Hence, Nano phosphors are effectively excited near UV light and emit in visible range plays an important role [6]. Among different kinds of host materials, aluminates ($CaAl_2O_4$) have received a kind of interest due to its easy preparation, wide band gap, low cost and excellent physical and chemical stability [7].

The rare earth ions when incorporated with such host matrix give excellent luminescence results. In these, Eu^{3+} dopant ions were of high luminescence efficiency and proper CIE coordinates, further one of the most suitable sources corresponds to the red color of visible light spectra with a transition from ($^5D_0 \rightarrow {}^7F_2$). [8] $CaAl_2O_4:Eu^{3+}$ has more advantages for display applications, due to their higher stability, high quantum yield and higher emission intensity. Until today many synthesing methods like solgel, combustion, hydrothermal, co-precipitation, solvothermal, hydrothermal etc., [9].

The ultrasound method is used in preparing wide range of nano phosphors, including metals / sulphates /alloys/ aluminates / carbides/fluorides etc. This method also develops an interest for the synthesis of Nano phosphors because of its high potential uses like, controllable and fast reaction rate, smaller size distributions, high homogeneity, uniform mixing, less synthesis time, and least energy requirement and can be scalable to industrial needs. [10], this method is simple to operate and maintain also it is a convenient yet comparatively inexpensive tool. In this method the prepared solution was subjected to ultrasound irradiation, the micro bubbles (cavities) created in the solution was implosively collapsed by sound waves with which very high temperature and high cooling rates can be achieved which leads to the synthesis of many nanostructure materials including metals, alloys, oxides, sulphides and nanostructure supported catalysts.

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Analysis of Machining Parameters of Materials using forged & heat treated D type cutting tool

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Abstract—**Aluminum, brass and aluminum based metal matrix composite are considered as work piece materials, Forged & heat treated D2 and D3 having better hardness value are selected as Cutting tool material. This paper is focused on the study of chip formation during turning of aluminum, brass and composite along with study the influence of machining conditions, surface roughness. The cutting tool used in the present study is forged & heat treated D2 and D3 tool steel,surface roughness was measured and the results were observed for different machining conditions. Based on the surface roughness value, chips were classified as favorable and unfavorable chips.**

Keywords— **D1 & D2 tool, machining, surface roughness, chip formation**

I. INTRODUCTION

Aluminum as a base metal, brass as an alloy and composite materials are used as work pieces. Among three different materials composite machining is difficult to achieve good surface finish. Aluminum is very light metal and which can be easily machined under various parameters. It gives a good surface finish and responds to tool steel while machining. Brass alloy is a brittle material which is considered as difficult to machine using tool steel at more depth of cut. Particulate reinforced aluminum metal matrix composites are considered to be one of the 'difficult to machine' materials. Due to the addition of reinforcements like Silicon Carbide (SiC), alumina which are normally harder and stiffer than the matrix, machining become significantly more difficult when compared to normal conventional materials. Many authors have derived their excellent mechanical properties from the combination of reinforcement like SiC and a ductile matrix material such as Magnesium. The properties of Metal Matrix Composites (MMCs) are influenced by their matrix, reinforcement, and interface properties. Matrix materials are usually lightweight materials, and especially ceramic reinforcements are added to get high specific strength (Joshi et al., 1999; Caroline et al., 2000). Reinforcements have been used in the form of particulates, whiskers, or continuous fibers. Currently, most of the processes employed in the synthesis of MMCs involve the incorporation of ceramic particles such as carbides and borides into the matrices (Lin et al., 1997). Reinforcements like alumina have high yield strength and high modulus of elasticity. It also improves the hardness of the composite. The addition of graphite makes it act like a self- lubricant preventing the need of supplying separate lubricants while machining.

Variation of the cutting speed: type of chip breakage and chip segmentation In general, chip breakage can be divided into three different types [2]. Firstly, the chip may break into single segments just during the chip formation process due to low ductility (primary chip breakage). Secondly, spontaneous chip breakage may occur due to low strength, as consequence of rising chip weight or oscillation of the free chip end (secondary chip breakage). Thirdly, the chip may break due to collision with the workpiece, tool, or any other element of the periphery (tertiary chip breakage). In a very first step, it was analyzed whether any chip breakage occurred depending on the work piece material and cutting speed (Christophe Nobel et al).

The importance of chip formation has been well recognized and studied by other researchers. Problems with surface finish, work piece accuracy and tool life can be caused even by minor changes in the chip-formation process. Hence, it is necessary to understand the chip forming mechanism for this material through further investigation. This will render the material more suitable for advanced applications and more efficient chip control in machining can also be achieved. The theory of metal cutting regards the study of chip formation as the cheapest and most effective way of understanding the machining characteristics of a material (Joshi et al., 1999).Based on the available literature, it is clear that various factors like cutting speed, feed rate, rake angle and volume of reinforcement greatly influences on the chip formation mechanism. Joshi et al. (1999) observed that the chips produced while machining the composite showed a systematic breaking pattern depending on the volume of reinforcement in the composite material and found that the chip breaking can be related to mechanical properties by a chip breaking criterion. They also observed that at negative rake angles, the length of contact of chip on the tool face is higher; hence the chips could be flatter and hence comparatively larger in diameter. Besides that they also found that, if the cutting speed is low, the shear strength of a work hardening material is high resulting in an early breakage of chips. Thus, the phenomenon also decreased the number of circles (or the length of chip) through which a chip curls. According to Ravi raj et al.(2008),chips of discontinuously reinforced aluminum composites curl through circles of wider and larger diameter as the cutting speed increases; this may be due to adhering of work piece material on the tool face. The initial radius decreases with decrease in cutting speed. This could be due to changes in the length of contact on to tool face. Further studies reveal that the chip formation mechanism, during the machining of composites is mainly influenced by cutting speed. Increase in cutting speed results in the decrease in saw toothed chip.

Studies by Uday and Suhas (2009) also have concluded that feed rate is also a major factor in chip formation mechanism. At higher feed rates, the number of chip curls found is more than for a lower feed. This may be attributed to the increased

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Structural Design and Analysis of Calibration Device for Seismic Sensor for Lunar Application

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Abstract: *A seismic sensor is an instrument to measure the ground motion when it is shaken by a perturbation. This motion is dynamic and the seismic sensor or seismometer also has to give a dynamic physical variable related to this motion. These sensors are widely used in orbit to gather useful information. In this regard, the present work aims to design, analyse, fabricate and calibrate the Seismometer and its calibrating devices.. The Seismometer design will be based on the seismic waves generated due to earthquakes and volcanic eruptions. The Calibration of this Seismometer is performed using a Shaft that is fixed at one end on the rotor table. The other end of the shaft is free and hence acts as a Cantilever. The Seismometer is placed at the free end of the shaft and is subjected to rotations in equal angular intervals (0 to 90 degree). Also the Seismometer will be placed in a thermal chamber and is tested at various temperatures between -45 C to +85 C. The results/deflections will be recorded in arc seconds. The Seismometer will be programmed according to the results obtained during the calibration. Seismometers are instruments that measure motions of the ground, including those of seismic waves generated by earthquakes, and volcanic eruptions and other seismic resources. Records of seismic waves allow seismologists to map the interior of the Earth, and locate and measure the size of these different sources.A simple seismometer that is sensitive to up-down motions of the earth can be understood by visualizing a weight hanging on a spring. The spring and weight are suspended from a frame that moves along with the earth "s surface. As the earth moves, the relative motion between the weight and the earth provides a measure of the vertical ground motion. If a recording system is installed, such as a rotating drum attached to the frame, and a pen attached to the mass, this relative motion between the weight and earth can be recorded to produce a history of ground motion, called a seismogram.*

Keywords – Seismic Sensors, Lunar applications

I. INTRODUCTION

A seismic sensor is an instrument to measure the ground motion when it is shaken by a perturbation. This motion is dynamic and the seismic sensor or seismometer also has to give a dynamic physical variable related to this motion. A seismic sensor functions as a velocity sensor or an accelerometer that senses the ground vibration of the earth, which is widely used in the field of earthquake monitoring, resource exploration, and ocean bottom observation.

Several seismic experiments have been deployed on the Moon by the astronauts during the Apollo missions. These experiments provide a valuable resource of information.

In this context to explore more possibilities to collect data present work aims to design and analyse Seismic Sensor for Lunar Application. The Seismometer design will be based on the seismic waves generated due to moon quakes and volcanic eruptions on the lunar surface.

The quest to understand the seismic activity of the moon and also unravel the structure Apollo missions by NASA, USA have deployed both short and long period seismometers during 11, 12, 14, 15 and 16. A total of 12,000 moon quakes have been recorded by the lunar seismometers which were deployed during the Apollo missions. The quakes of focal depths are located within the crust and extend up to 900 km deep into the mantle. The interesting fact is the moon quakes are classified into four types with the shallow crustal moon quakes having the maximum magnitude recorded till date. The rock and regolith samples have provided valuable information in advancing our understanding about the moon. However, the internal structure of the moon is still rudimentary at the best. There are several questions still remain unanswered such as the composition and size of the moon" s core, the crustal thickness, and several other question related to the evolution of the moon. Further, several attempts are underway to understand the sensitivity and noise requirements for a seismometer in the expected Lunar environment to be 10 times better than the Apollo Mission Long Period seismometers.

The French and the Japanese are the latest to plan for the installation of the Very Broad Band seismometers developed by the French and the short period sensors by the Japanese on the moon during the Selene 2 mission.

A considerable amount of research work has been carried out over the past few decades and an extensive body of literature is available. Following are the literature review on which the present work is based.

R. Yamada: This study reports the design and development of a "penetrator seismometer system for lunar seismic event observation". The penetrator seismometer system (PSS) consists of two short-period sensor components, a two-axis gimbal mechanism for orientation, and measurement

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Review Paper on Implementation of 5S in Different Industries

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ABSTRACT

This paper explains the methods and techniques of 5 S uses to increase the efficiency of all processes in the company. Special emphasis will be given to the implementation of 5S system and elimination of losses in the company. It can be observed that introducing the 5S rules bring the great changes in the company, for example: process improvement by cost reduction, increasing of effectiveness and efficiency in the processes, maintenance and improvement of the machine efficiency, safety, security, quality and reduction of the industry pollution, proceedings according to decisions. The 5S methodology permits to analyze the processes running on the workplace and establishment of 5Ssustaining well organized, clean, high effective and high quality workplace. Research clearly show, that very essential is training of workers about the 5S rules. Essential thing is to divide activities on some main steps and to maintain the continuous improvement. This method can be used in all companies. Its result is the effective organization of the workplace.

I. INTRODUCTION

5S is a technique originated from Japan and it was first developed by Hiroyuki Hirano. It include Five words Seiri, Seiton, Seiso, Seiketsu and Shitsuke, which means Sort, Set in order, Shine, Standardize and Sustain respectively. The 5S technique is included within Kaizen which means Change for the better. It allows the enhancement of efficiency and productivity. The 5S technique is a structured program to systematically achieve total organization cleanliness, and standardization in the workplace. The benefit of 5S technique is improvement in productivity, quality, health and safety [1, 6, 7, 12]. Term of 5S given as:

SEIR(sort): the removal of all unwanted, unnecessary, and unrelated materials in the workplace.

SEITON (set in order): This step consists of putting everything in an assigned place so that it can be accessed or retrieved quickly as well as returned in that same place quickly.

SEISO (shine/clean): It is consists of cleaning up the workplace and giving it a 'shine'.

SEIKETSU (standardize): It defining the standards by which personnel must measure and maintain cleanliness.

SHITSUKE (sustain): This last step is about 'Discipline.' It maintain orderliness and to practice the first 4 S as a way of life the introduction of the paper should explain the nature of the problem, previous work, purpose, and the contribution of the paper. The contents of each section may be provided to

II. 5S METHODOLOGY

SEIRI

The necessary and unnecessary materials understand easily about the paper.

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WATER TREATMENT USING BIOENZYME – A REVIEW

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Abstract - **Water is an essential source for all living beings it is polluted by various means by industrial effluents, waste water and oil spillage. Unfortunately, water bodies are still used as sinks for wastewater from domestic and industrial sources. However, in recent times, the need to replenish our water resources has been receiving increasing attention. This has led to the development of strategies to return water to its source in the least toxic form possible, to enable reutilization of water. Water treatment can be done effectively in organic way by using Bio enzymes. Bio-enzyme is a natural, non -toxic, non-flammable, non-corrosive liquid enzyme formulation prepared by fermentation process of organic materials. In this review paper the effective use of Bio-enzyme in purification of water is discussed. There was decrease in the parameters like Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Solids (TS), Total Dissolved Solids (TDS), Total Suspended Solids (TSS), pH, Alkalinity and other chemicals after treatment of water with Bio enzyme.**

Keywords – Bio-enzyme, water treatment, Organic cleaning

I. INTRODUCTION

India is a developing country where there is an increase in population and rapid industrialization. Among other industries, the dairy industry is also growing day by day due to increase in milk demand. These industries discharge large amounts of wastewater every day [1].

In past few years, researchers are working to find new techniques for reclamation of water focusing on biological or physical wastewater treatment methods rather than chemical ones [12].There are different types of water treatment and biological treatment is one such type. In a water body, organic matter is converted into inert mineralised products by purely natural mechanisms, characterising the self-purification phenomenon. In a waste water treatment plant the same basic phenomena occur, but the difference is that there is the introduction of technology.

Biological systems are able to bring about the degradation of the target chemicals primarily due to their enzymes. Hence enzymes, both intracellular and extracellular, are being explored as biochemical means of wastewater treatment [10]. Biological systems are able to bring about the degradation of the target chemicals primarily due to their enzymes. Hence enzymes, both intracellular and extracellular, are being explored as biochemical means of wastewater treatment. In general, enzymes are highly specific and extremely efficient catalysts. They can selectively degrade a target pollutant without affecting the other components in the effluent. Therefore, enzymatic treatment is suitable for effluents that contain relatively large amounts of the recalcitrant target pollutants in comparison to others. More importantly, they can operate under mild reaction conditions, especially temperature and pH. In this respect, enzymes outperform the regular catalysts (transition elements like Cu, Ni etc.). From the environmental perspective, enzymes are more acceptable due to their biodegradability. In the case of reactions wherein the target pollutant is oxidized, the enzyme receives one or more electrons from the substrate and donates these electrons to an electron acceptor. Hence, at the end of the reaction the enzyme is regenerated and is available for the next catalytic cycle. Some of the oxidative enzymes such as the peroxidases require hydrogen peroxide (H2O2) or alkyl peroxide (R2O2) to act as the electron acceptor. Others such as laccases utilize molecular Oxygen for this purpose [10].Use of bio-enzyme in biological treatment of wastewater could be a viable and eco-friendly solution.

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Production of Cotton Seed Oil Biodiesel and its usage in a C I engine with Methyl Ester and Al_2O_3 Additives

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Abstract— **in this work, cotton seed crude oil was produced from the dried seeds collected from market in mechanical expeller. The free fatty acid (FFA) of cotton seed crude oil was found to 0.5076 then it was subjected to double stage transesterification process. The maximum yield of cotton seed biodiesel was found to 94.7% at optimized variables such as catalytic concentration, molar ratio and reaction time. In addition to pure (100%) biodiesel usage the neat diesel and Al_2O_3 nano particle additives were used to blend the biodiesel in different proportions. The properties of the blend made of 20% cotton seed biodiesel and 80% neat diesel and Al_2O_3 nanoparticles were found close to pure diesel properties. A single cylinder, four strokes diesel engine was tested at different loads by maintaining constant speed 1500 RPM with cotton seed biodiesel and its blends with neat diesel and Al_2O_3. It is observed that the brake specific fuel consumption (BSFC) was less with blend of 20% when compared with neat diesel.**

Keywords—**Cotton Seed, Biodiesel, Transesterification, Al_2O_3 BTE, BSFC & EGT.**

I. INTRODUCTION

The depletion of fossil fuel coupled with an increase in fuel prices has been encouraged the research for other substitutes such as biodiesel. A Biodiesel is an alkyl ester of fatty acids obtained from plants or animals by the transesterification of oils or fats with short chain alcohols such as methanol and ethanol. Biodiesel has numerous advantages over conventional diesel with respect to renewability, nontoxicity and biodegradability. Biodiesel contains lesser amount of sulphur compounds and a higher flash point (>1300C), lower CO2 and hydrocarbon emissions and also considerably lesser particulate matter.

Biodiesel in addition to reduction of dependency on foreign export crude oil, it has a helpful social impact by encouraging farmers to regenerate vegetable oil crops and earn an income. The source for biodiesel production is chosen according to the availability in each geographical area. Oils from different sources have different fatty acid compositions. The fatty acids are different in relation to the chain length, degree of unsaturation or presence of other chemical functions. There is a growing interest about high-yielding non-edible tropical crops such as Jatropha curcas, pongamia pinnata etc. It is found that an algae have oil productivities more than any land-based crops and can meet global demand for transport fuels.

Catalysts that are used in the biodiesel making process may either be base, acid, or enzyme materials. Sodium hydroxide, potassium hydroxide and sodium methoxide are the most commonly used catalysts. Base catalyzed reactions are relatively fast, with residence times from about 5 minutes to about 1 hour, depending on temperature, concentration, mixing and alcohol: triglyceride ratio. Acid catalysts include sulfuric and phosphoric acids. Compared to base catalysts, acid catalysts reactions have been found to be too slow for industrial processing.

In recent years high demands of petro-diesel as a result of hugely raise in cars. Higher worth of diesel and environmental problems, the biodiesel as an alternate fuel is extremely concern subject. The biodiesel is that the demand of country like Asian nation as an alternate fuel as a result of the price of Diesel is increasing day by day attributable to increasing the worth of oil. The economy of the country additionally depends on diesel price variation. The utilization of vegetable oils for cookery purpose produces principally the matter of their disposal. The correct utilization of those oils is an advantageous for biodiesel production. The vegetable oil alkyl radical organic compound might be one in all the nice sources for production of biodiesel that is an alternate fuel of diesel. In Asian nation particularly within the region of geographic region, high yield of cottonseeds takes place.

Energy acquired from non-renewable energy sources is greatly fundamental for the standard of life, prosperity and social advancement of the people in like manner with respect to financial process. Energy demand is generated through speed industrial enterprise and modernization. Demand in energy can be satisfied by paying earned financial gain to the majority of the developed countries. The surroundings can be affected catastrophically due to the utilization of fossil fuels which also affects a disaster in energy. Burning engines can be affected due to decrease in environmental pollution and non-renewable energy sources. Low-emission various fuels like fermentation alcohol, methyl ester and compressed fossil fuel (CNG) for diesel engines should be developed crucially [7].

Cheap oils can be used for C I engine if there is any shortage of oils. Biodiesel is popular because of its inexhaustibility; bring down fumes discharges, and biodegradability. Methyl ester can be manufactured by transesterification method. Comparing diesel oil with biodiesel the later is harmless, perishable and renewable. Compared to diesel oil biodiesel has higher cetane number and it is also free from foul smell [8].

II.METHODOLOGY

2.1 Biodiesel production

The process of biodiesel production is having several steps. They are shown in the Flow Chart. From the flow chart shown in figure 4.1, it is very easy to understand the processes behind biodiesel production. Here it explains the biodiesel production of cotton seed oil by alkali base transesterification process. And the detailed production process will be explained briefly step by steps below. In that the pretreated oils are carrying a transesterification process under the suitable alcohol generally methanol and catalyst at given temperature and reaction time.after the process taking reaction solution in separating flask

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Studies on Hardened Properties of M-20 Grade Concrete Using Recycled RMC Waste Coarse Aggregates

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Abstract — **Various combination of concrete are available in market but still achieving the desired strength with locally available materials has vast scope. The study investigates the strength determination of the composite concrete using supporting material like recycled waste from ready mixed concrete plant. In general the normal concrete is good in compression and exhibit lower tensile strength. The proposed concrete in combination with 50% recycled waste shows good tensile strength and other concrete properties.**

Keywords—Concrete, Compressive strength, recycled waste

I. INTRODUCTION

Ready Mix Concrete is a type of concrete that is manufactured in a factory or batching plants, according to a set proportions and then delivered to the work site by a truck mounted in transit mixers. This results in the precise mixture and specialty concrete mixtures to be developed and implemented on construction site. Ready mix concrete is advantageous when large quantities of concrete are to be mixed. Ready mix concrete is ideal for large jobs where space is limited Transit mixed concrete materials are batched at a central plant and are completely mixed in the transit. Frequently, concrete is partially mixed in the transit and is completely mixed at the job site [1]. This type of mixing allows the concrete to be mixed immediately before placing at the construction site as it keeps the water separate from the cement and aggregates. The problems of premature hardening and slump loss obtained due to delays in transportation or placement of central mixed concrete are avoided consequently by this method of mixing. Concreting in most of the construction sites is mechanized now-a-day's using hatching plants, truck mixers & concrete pumps and that is how RMC plants are popular today in the country. In the recent past Batching Plants are preferred in most of the construction sites for the production of concrete to improve overall operational efficiency [2]. Concrete for the projects can be sourced either from a nearby Commercial RMC Plant or from a plant installed at the Project site itself [3]. Later the truck mixers are used for transporting the concrete &concrete is placed/pumped in the site using stationary concrete pumps or truck mounted boom ups [4, 5].

II. MATERIALS USED

GENERATION OF WASTE Two types of waste were generated in the RMC plants is Sludge and Left over concrete (Hardened concrete lumps). In RMC plants, concrete generally ends up as waste due to the following two reasons: During the slump check of fresh concrete and after the truck returns from the construction site. The hardened concrete (inert) waste from RMC plants also occupies the landfills in greater capacity. Therefore, concrete recycling becomes a necessary strategy in order to preserve environment and effective utilization of resources. The waste hierarchy refers to the "3R's principle" reduce, reuse and recycle, which classify waste management strategies according to their desirability in terms of waste minimization. The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of waste. Reuse and recycling is done in order to utilize the generated waste and to reduce landfill sites.

Recycling

The recycling of construction, demolition and excavation waste involves the processing of the material through one of the washing equipment installations and the subsequent production of sand and aggregate products. Waste recycling plans should be developed for construction and demolition projects, prior to beginning of a construction activity. The plans should identify the wastes that will be generated and designate handling, recycling and disposal methods accordingly. A Recycling Plant is the only solution to prevent dumping of residual concrete, in wet form. It also helps to recycle the residual concrete and aggregates & slurry water can be reused. We need to reduce (consumption), re-use & recycle to minimize the hazards related to pollution. The Recycling Plant is so far the best solution to ensure both maximum utilization of raw-material and control dumping of unused concrete, thus enabling us to optimally use our natural resources like sand, water, aggregates, etc.

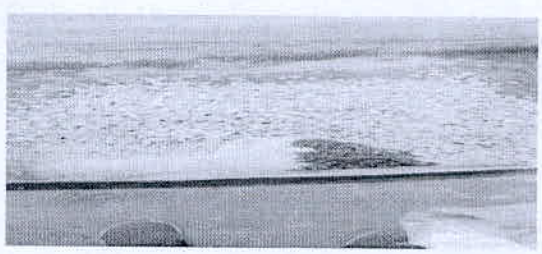

Fig. 1. Recycled aggreagtes

In the study propose a mix design of M-20 concrete using particular proportion of recycled aggregates. The strength of the concrete is determined by use of recycled coarse aggregates obtained from ready mix concrete (RMC) plant waste.

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DETERMINATION OF MARSHALL PROPERTIES OF HOT MIXED ASPHALT MIXED WITH RECYCLED COARSE AGGREGATE

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Abstract
The migration of population towards the big cities generates rapid construction activities. These activities not only put pressure on natural resources but also produce construction, renovation and demolition waste. There is an urgent need to find out ways to handle this waste owing to growing environmental concerns. This can reduce pressure on natural resources as well. The incorporation of Recycled Coarse Aggregate (RCA) in Hot Mix Asphalt (HMA) could be a way to promote sustainable construction.

In this investigation, a laboratory characterization of HMA made with RCA from Construction and Demolition Waste (CDW) for base layers in road pavements was conducted. Percentages of 5%, 10%, 20% and 30% of RCA in place of natural aggregate was analyzed. Rothfuch's graphical method of aggregate gradation was used to grade the aggregates according to MoRTH specifications for DBM grade 2. The Marshall Mix design procedure was used to develop the mixes. The Marshall Stability and flow test provides the performance measure for the Marshall Mix design method. The Marshall properties (stability, flow value, percentage air voids, voids filled with mineral aggregates (VMA), voids filled with bitumen (VFB)) of the mixtures were studied. The results indicated that HMA made with RCA exhibited mechanical properties similar to those obtained for conventional mixtures and thus, the mixes are found to comply with IRC specifications.

Keywords: Construction waste, Hot mix asphalt, Marshall properties, Mix design, Recycle

Introduction
The demand for good-quality highway materials continues to increase whereas economical sources are becoming more limited. This demand may become more critical, especially with the policy (adopted by some state highway departments) of banning some aggregate types that have been frequently used in the past for producing paving mixtures.

Bituminous mixture is a combination of aggregate and binder. The aggregate acts as the structural skeleton of the pavement and bitumen acts as the glue of the mixture. The properties of the aggregate have direct and significant effect on the performance of the pavement. The utilization of industrial by-products and recycled materials in road construction as secondary and alternative materials has gained widespread acceptance and is becoming more important.

To date, several investigation have examined the use of this type of waste material in HMA. In this investigation, a laboratory characterization of HMA made with Recycled coarse aggregates (RCA) for base layers in road pavements was conducted. Percentages of 5%, 10%, 15% 20%, 25% and 30% of RCA in place of natural aggregate was analyzed. The results indicated that bituminous mix made with RCA exhibited mechanical properties similar to those obtained for conventional mixtures.

The Marshall Mix design procedure was used to develop the mixes. The Marshall Stability and flow test provides the performance prediction measure for the Marshall Mix design method. The stability portion of the test measures the maximum load supported by the test specimen at a loading

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PARTIAL REPLACEMENT OF BITUMEN WITH CANDLE WAX IN BITUMEN MIX GRADE

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Abstract— Bitumen is obtained from the distillation of petroleum. It is basically a sticky type of black viscous liquid and is the semi-solid form of petroleum. It is found in natural deposits and sometime. The bitumen is used as a sort of binding agent throughout the world and its need is on increasing alarm. This study is basically based to modify bitumen by using candle wax, Various tests were being done in order to find out what will be the effect on the bitumen by adding smaller percentages of waxes. The modification was done and the results were being recorded with the Hot mix asphalt technologies. By adding waxes at various percentages like 1%,2%,3%,4% were being added to it at varying percentages with the bitumen. The results showed that by adding waxes on bitumen the viscosity is increased as the wax content is being decreased and by this the compaction temperature and their addition temperature was also decreased.

Keywords— Candle wax, Bitumen., Marshall Properties, Mix design, Replacement.

I. INTRODUCTION

Bitumen is defined as a viscous liquid that constitutes the mineral oil, which possess a variety of hydrocarbons which will have a high or increased molecular weight and these hydrocarbons contain small proportions of oxygen, nitrogen and also of Sulphur. Additionally, it also has hydrocarbon derivatives which are being soluble in carbon Di-Sulphide Bitumen is either black or it can be brown in Colors, according to its mode of derivation. It has good water proofing and adhesive that is the sticking properties. Candle wax is defined as a soft white material which is basically colorless in nature. It is being extracted from petroleum coal and then the mixing is being done. This mixing occurs having about 20 to 40 carbon atoms in it. The melting point of the wax is 37°C and the Boiling point is greater than 370°C. At room temperature it is generally hard in nature and when the temperature is being increased it starts to melt. The term wax was firstly use in bee wax. But due to new technologies, it was made significant on various important issues like wax being applied to solids as well as on liquids. Due to the recent development the volumes of the traffic and the heavy axle loads are being increasing tremendously, so the researchers try to make ways of improving the bitumen mixture by increasing their performance and for this the best way to do is by modification of the bitumen with the help of certain additives. When the bitumen is being manufactured from crude oil, in this process large amount of gases like benzene, Sulphur dioxide and also nitrogen oxide are being evolved out in the atmosphere and these can be little bit controlled in the industry, but when the process of transportation and the application process takes place, bitumen gets heated to high temperatures.

OBJECTIONS

- To study the properties of the bitumen when added with small quantities of candle wax.
- To analyse the effect on the softening properties of the bitumen.
- To investigate on the strength parameters of the bitumen with the addition of the modifiers.
- To study about whether the bituminous mix is sustainable or not.
- To study about the economic and financial aspects that is being generated by the bitumen and the various mixes.
- To evaluate about the effects on the environment.

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PERFORMANCE EVALUATION OF CONCRETE WITH AND WITHOUT FLY ASH BY PARTIAL REPLACEMENT OF M-SAND WITH COPPER SLAG

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Abstract - **Many researches have already found it potential to use of copper slag as a concrete combination, as a result of copper slag has similar particle size characteristics seemingly to it of Sand.The present study mainly focuses on investigating the effect of using copper slag as a replacement of fine aggregate and the strength properties for M25 grade of concrete.The tests are to be conducted for various proportions of copper slag replacement with m-sand of 25%,50%,75%,100% in concrete the obtained results where compared with those of conventional concrete.Meanwhile test like specific gravity , sieve analysis , compression test , setting time .etc, are conducted for materials used in project and casted.Compressive strength are determined and compared. The block which comprises low cost and good compressive strength is suggested.**

Keywords – Concrete, Flyash, Copper Slag, M-sand

I. INTRODUCTION

Concrete is the man made material widely used for construction purposes. The usual ingredients in concrete are cement, fine aggregate, coarse aggregate, and water. With increasing scarcity of river sand and natural aggregate across the country, researches began cheaply available material as an alternative for natural sand. Utilization of industrial waste or secondary material has increased in construction field for the concrete production because it contributes to reducing the consumption of natural resources.In India, there is great demand of aggregates mainly from civil engineering industry for road and concrete constructions. But, now days it is very difficult problem for availability of fine aggregates. So researchers developed waste management strategies to apply for replacement of fine aggregates for specific need. Natural resources are depleting world- wide while at the same time the generated wastes from the industry are increasing substantially. The sustainable development for construction involves the use of nonconventional and innovative materials, and recycling of waste materials in order to compensate the lack of natural resources and to find alternative ways conserving the environment.

II. MATERIALS & METHODS

The properties of concrete both in fresh and hardened state depend largely on the properties of constituent materials used for its preparation. Detailed characterization tests were conducted in the laboratory to evaluate the required properties of the individual materials. The relative quantities of cement, aggregates, copper slag, fly ash and water together, controls the properties of concrete in the fresh state. The compacting factor was conducted to assess the workability.

III. MATERIALS USED

1. CEMENT.
2. FINE AGGREGATE.
3. COARSE AGGREGATE.
4. FLY ASH.
5. COPPER SLAG.
6. POTABLE WATER

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EXPERIMENTAL INVESTIGATION ON PROPERTIES OF PAPERCRETE OVER CONVENTIONAL CONCRETE

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Abstract*— The major problem that the world is facing today is the environmental pollution. The majority of abandoned paper waste accumulating from the countries all over the world causes certain serious environmental problems. The present study focuses on utilizing the materials like waste paper and fly ash into cost effective building materials and re-cycle the wastepaper without any problem to the surrounding environment and the society .The investigation will be carried out to evaluate the strength and structural properties of fly-ash based papercrete moulds. Then the results will be compared with those of conventional moulds. The inference of the study could be that the papercrete materials are relatively low cost, light weight and more flexible.

Keywords— Papercrete, Strength, Light weight Material, Waste paper.

I. INTRODUCTION

1.1. General:

The world has been faced with environmental problems such as global warming, forest destruction and lack of resources. To solve these environmental problems, resources recycling have been performed.

Especially, paper is one of the most effective recycling resources to prevent global warming, forest destruction and etc. A name of papercrete was derived from its materials. Generally, it was made up of paper, cement and water. In order to resolve CO2 emission which made from construction sites because of cement this study is carried out. Papercrete is a new composite material using waste paper as a partial replacement of coarse aggregate. By using the waste paper, papercrete is not only reducing the amount of cement using but also making environmentally friendly building materials. This study aimed to evaluate the fundamental mechanical properties such as compressive, flexural and splitting tensile strength of papercrete containing waste papers as a partial replacement of coarse aggregate. Papercrete is a type of fibrous cement, made by shredding paper (old newspaper's...) into pulp in water and adding Portland cement. The thick mix can then be poured into moulds and cast like concrete, creating blocks, panels and innumerable other shapes. When cured and dried (above right), papercrete is strong, lightweight, insulating and has many properties which make it an ideal building material. It was discovered by ERIC PATTERSON and MIKE MCCAIN.

1.2 Objectives:

The major Objective of the project is replacing the costly and scarce conventional building blocks by innovative and alternative building blocks, which satisfies the following characteristics,

- Cost effective
- Environmental friendly
- Less weight
- Inflammable
- Less water absorption
- Easily available

1.3 Papercrete:

Papercrete is a tricky term as the name seems to imply a mix of paper and concrete, known as papercrete. But to be more accurate, only the Portland cement part of concrete is used in the mix. Papercrete may be mixed in many ways and different types of papercrete contain 50%-80% of waste paper. With the expected increase in literacy rate and growing economy, an increase in per capita consumption of paper is expected. The demand for upstream market of paper products like, tissue paper, tea bags, filter paper, lightweight, coated paper, medical grade coated paper etc., is shooting up. Due to this tremendous increase in use of paper, 1600 m3 papers are wasted in India per day. Even though the waste papers are recycled in paper industry is only 29%

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A Comparative study on Water Quality Assessment of Chikkabanavara Lake in Bangalore City, Karnataka, India

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Abstract - Lake water is the source of drinking and domestic use for rural and urban population of India. The aim of current comparative study was to assess water quality of Chikkabanavara Lake water, Bangalore. For this, lake water samples were collected from fifteen different locations on the basis of their importance were analyzed for the parameters like Temperature, Colour , Turbidity, , pH, Total Hardness, Calcium, Magnesium, Total Alkalinity, Nitrate, Chloride, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD). . Findings suggest that lake water is not in the acceptable range for domestic usage, the Water Quality does not remain constant and it tends to change with time, more analysis can be conducted on the Lake after some time. Comparing previous data lake pollution rate is increasing constantly.

Keywords— —lake water, water quality, water pollution, physicochemical conditions

I. INTRODUCTION

Water quality refers to the chemical, physical, and biological characteristics of water based on the standards of its usage. A lake is an area filled with water, localized in a basin, surrounded by land, apart from any river or other outlet that serves to feed or drain the lake. The most common standards used to monitor and assess water quality convey the health of ecosystems, safety of human contact, and condition of drinking water. Water quality has a significant impact on water supply and oftentimes determines supply options. WQI is defined as a rating reflecting the composite influence of different water quality parameters. WQI is calculated from the point of view of the suitability of groundwater for human consumption. Rapid urbanization, especially in developing countries like India, has affected the availability and quality of groundwater due to its overexploitation and improper waste disposal, especially in urban areas. According to WHO organization, about 80% of all the diseases in human beings are caused by water.

II. DETAILS OF THE STUDY AREA

Bangalore is located at a latitude of 12° 58′N and longitude of 77° 35′E at an altitude of 921 m above mean sea level (Lokeshwari and Chandrappa 2006). Bangalore spread over an area of 1000 km2 lies between latitudes 12°39′00″ to 131°3′00″N and longitudes 77°22′00″and 77°52′00″E and is heavily dependent on groundwater for its water requirements. This mega city situated on a N–S trending highland forms a divide between the rivers Arkavathi on the west and South Pennar on the east. Chikkabanavara Lake is located at a distance of 1.5 km north of Chikkabanavara railway station on the Bangalore-Tumkur railway line. The lake lies at 13°04'57.7"N 77°30'25.5"E. Chikkabanavara Lake spreads at about 100 acres on the outskirts of Bangalore.

Fig 1: The photo of Chikkabanavara Lake as captured from Google Maps

III. MATERIALS AND METHODS

Surface water samples for investigations were collected from fifteen different point in the lake sites selected which covered the critical area of the lake at 13°04'57.7"N 77°30'25.5"E.The grab samples were collected at 1 pm for on every Monday of week at 1 pm, sample was collected for period of August-December: 2020 and these were well preserved according as explained in the manual of Standard Operating Procedures of Sample storage, preservation and handling (IS:3025, 2003). Then they were later mixed together to get the composite samples. They were also labeled in order to prevent sample misidentification during analysis. The analysis of the following physicochemical

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ANALYSIS OF PROPERTIES OF SELF-COMPACTING CONCRETE UNDER VARIOUS TEST CONDITIONS

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Abstract – ***Construction is one of the rapidly evolving industries all over the world. Out of all these materials concrete is the mainly and broadly used construction material in the world. The development of Self compacting concrete (SCC) has contributed to a mounting degree of architectural autonomy to carry out more complicated and sophisticated construction geometries, considering the various uses in structures SCC have been widely utilized in different countries. In this paper analysis of SCC is carried out under various test conditions and results shows that, in comparison with zero thermal cycles, there is a decrease in strength (compressive & tensile) values with increase in thermal cycles @ 150°C & 200°C for both 7 & 28 days cured SCC specimens of all 4 mix proportions.***

Keywords – Concrete, Casting, Super plasticizer, furnace slag, Micro cement

Keywords – Concrete, Durability, Bacterial species

I. INTRODUCTION

Concrete is most common material used for all type construction due to its durability, concrete become inevitable. Construction is one of the rapidly evolving industries all over the world. There is constant need to adopt in this rapidly evolving industry. Construction materials play a crucial role in making construction activities more effective and efficient. Concrete has to compete with other construction materials such as steel, plastic and wood, when it comes to economy, productivity and quality.

However, there is a limit to the fluid behaviour of normal fresh concrete. Improper compaction of concrete may lead to creation of voids and affect the durability of concrete. Thus to have a proper compaction without affecting the strength and durability of concrete which compacts itself by its own weight is used.

To observe the actions of SCC compressive test were conceded out. Obtained result indicates this method could produce lucratively high quality of self-compacting concrete. it became evident that SCC provided many other additional benefits, irrespective of the skill of the construction worker. Self-Consolidating concrete and High Performance Concrete are the development made referring SCC which can pour easily in all directions under its self-weight. There will be no reduction in the uniformity of concrete and loss of coarse aggregates from the concrete while placing and flow.

The compulsion of this type of concrete was proposed by Okamura in 1986. Professor **Ozowa of Japan (*Ozowa et al., 1989)*** introduced the term 'Self-compacting concrete' (SCC) and then developed it at the University of Tokyo and after that it was developed by **Okamura and Ouchi *(Okamura and Ouchi, 2003).***

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STUDY ON STRENGTH OF SELF HEALING BACTERIAL CONCRETE

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Abstract -

Durability of concrete is highly affected due to cracks and it leads corrosion of reinforcing bars. In concrete structures, repair of cracks usually involves applying a cement slurry or mortar which is bonded to the damage surface repairs can particularly be time consuming and expensive. In this study Bacterially induced calcium carbonate precipitation has been proposed as an alternative and environmental friendly crack repair technique. In our study bacterial species bacillus subtilis is used to improve the strength of concrete. Researchers have shown that the microbiologically induced endosperm forming bacteria is able heal cracks effectively.

Keywords – Concrete, Durability, Bacterial species

I. INTRODUCTION

Concrete is most common material used for all type construction due to its durability, concrete become inevitable. The only defect in use of concrete is that this is weak in tension Durability of concrete is highly affected due to cracks and it leads corrosion of reinforcing bars, so it is very essential to find suitable repair mechanism for regain the strength of concrete. In concrete structures, repair of cracks usually involves applying a cement slurry or mortar which is bonded to the damage surface repairs can particularly be time consuming and expensive. For crack repair, a variety of techniques are available like impregnation of cracks with epoxy-based fillers, latex binding agents such as acrylic polyvinyl acetate, butadiene styrene etc. But traditional repair system has a number of disadvantages aspects such as different thermal expansions coefficients compared to concrete and also have impact on environment and health therefore, bio-based calcite precipitation has been proposed as an alternative and sustainable, environmental friendly crack repair technique.

A method of strength improvement of cement–sand mortar by the microbiologically induced mineral precipitation was described **by P. Ghosh et al. (2005).** A thermophilic anaerobic microorganism is incorporated at different cell concentrations with the mixing water. The study showed that a 25% increase in 28-day compressive strength of cement mortar was achieved with the addition of about 10 cell/ml of mixing water. As synthetic polymers, used for concrete repair, may be harmful to the environment, the use of a biological repair technique was investigated by **K. Van Tittelboom et al. (2010)**. Uratolytic bacteria such as Bacillus sphaericus were able to precipitate CaCO3 in their micro-environment by conversion of urea into ammonium and carbonate. The bacterial degradation cubes absorbed more than three times less water than control cubes as a result of microbial calcite deposition. Microorganism is a unique living element and has the ability to precipitate minerals through the process of bio mineralization. The precipitation process occurred naturally and most of the precipitated products are very important compound composed of such as carbon, nitrogen, oxygen, sulphur, phosphorus and silica. So far, concrete incorporated with microorganism that

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The Flow of a Micropolar Fluid through a Cylindrical Tube with Catheter Insertion

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Abstract: ***An exact solution to the problem involving a non-steady flow of a micro polar fluid through an annular region is obtained. A coupling coefficient and two length ratios arise in the study. The effect of the suspended particles is to stabilize the flow. The classical Newtonian results are obtained as a limiting case of the present general study. The problem has possible extra – corporeal and intra – corporeal applications***

Keywords – Seismic Sensors, Lunar applications

1. INTRODUCTION

Probing physiological situations is a common phenomenon in today's medical world wherein sophistication in equipments is so much that sizes, big or small, do not seem to matter. Sizes of non – invasive probes seem to be decreasing by the day. Irrational shrinking of sizes can, however, not be done. There has to be some rationale in going for telescoping. In view of the above there is a dire need for a proper analysis to suggest optimum size for non – invasive probes. With an ultimate aim of peeping into actual situations, we consider a representative situation involving a fluid with micronsized suspended particles flowing in an annular region. The result of the study is expected to throw light on the possible answers to questions raised above. The theory of micro-fluids introduced by Eringen [1,2] deals with a class of fluids which exhibit certain microscopic effects arising from the local structure and micromotions of the fluid elements. A sub class of these fluids is the micropolar fluid[3]. This class of fluids possesses certain simplicity and elegance in its mathematical formulation. Animal blood and polymeric fluids may be represented by the mathematical model underlying these fluids (see Power[4] , Lukaszewicz [5] and Eringen [6]). In this paper, we solve an unsteady shear flow problem involving an Eringen – micropolar fluid [3] and extract qualitative insights into more general situations. An analogous problem in a cartesian frame was investigated by Mizukami[7].

II. MATERIALS & METHODS

FIELD EQUATIONS

The linear constitutive equations for the micro polar fluid is,

$$t_{kl} = (-\pi + \lambda_1 v_{r,r})\,\delta_{kl} + 2\mu\, d_{kl} + 2\tau\, \varepsilon_{klr}(\omega_r - \sigma_r)$$

$$m_{kl} = \alpha \sigma_{r,r}\,\delta_{kl} + \beta \sigma_{k,l} + \gamma \sigma_{l,k}$$

$t_{kl}, m_{kl}, v_r, \sigma_r$ *and* π

are stress tensor, couple stress tensor, velocity micro rotation and thermodynamic pressure respectively.

The quantities,

d_{kl} **and** ω_k $\qquad 2d_{kl} = v_{k,l} + v_{l,k}$

are defined through,

$$2\omega_k = \varepsilon_{klr} v_{r,l}$$

Where λ_1 and μ are viscosity coefficients of classical fluid mechanics and where $\lambda 1$ and μ are viscosity coefficients of classical fluid mechanics and are the new viscosity coefficients of micro polar fluids. The field equations for micro polar fluids in vectorial form is given by,

$$\frac{\partial \rho}{\partial t} + \nabla \cdot (\rho v) = 0$$

$$(\lambda + 2\mu)\nabla\nabla\cdot v - (\mu + \tau)\nabla \times \nabla \times v + 2\tau \nabla \times \sigma - \nabla \pi + \rho f = \rho \dot{v}$$

$$(\alpha + \beta + \gamma)\nabla\nabla\cdot\sigma - \gamma \nabla \times \nabla \times \sigma + 2\tau \nabla \times \sigma - 4\tau\sigma + \rho l = \rho j \dot{\sigma}$$

Where ρ, j, f and l are mass density, micro inertia, body force per unit mass and body couple per unit

Design of an Adaptive Clustering Mechanism for Large Datasets on social media Comments

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Abstract- The social media gives an important role for the contributions of the economy and development of a country. The performance of the country will be upgrade from the public opinion about any system. The opinion of the public will be considered as a data for the growth of the nation. Text mining can be used to know public opinion about the system implemented in real time. The rapid growth of data in social media initiates the researchers to use the data source as big data analysis. The dataset can be derived from Face book, Twitter public sentiment in part of service, website system, and news can be used as consideration as a input as social media comments. This study proposes a new parallel clustering algorithm based on the k-means algorithm. It significantly reduces the exponential growth of computations. The proposed algorithm splits a dataset into batches while preserving the characteristics of the initial dataset and increasing the clustering speed. The idea is to define cluster centroids, which are also clustered, for each batch. According to the obtained centroids, the data points belong to the cluster with the nearest centroid. Efficient framework is used for pre-processing the data. Testing is used to measure the performance level of mini batch K-means algorithm by using the evaluation metrics such as purity, entropy and F-measure.

Keywords- *Big data, text mining, k-means algorithm, text comments, data pre-processing.*

I. INTRODUCTION

Data mining is known as Knowledge Discovery in Databases (KDD).Data mining is a process of analyzing large databases to find patterns that are valid, useful, and understandable. The valid means holds the new data with some certainty and useful means data mining should be able to act on the terms in the comments finally, the understandable means humans should be able to read/identify the pattern. Data mining performed with large data, heterogeneous machine learning, statistics, artificial intelligence, databases and visualization.

Text mining is a part of data mining its aim is to extract high-quality information from the given text. The extraction of high quality information can be done through statistical pattern learning. text mining includes information retrieval, lexical analysis, pattern recognition, information extraction, data mining techniques, association analysis, visualization, and predictive analytics.

Cluster analysis or clustering is the process of grouping a set of objects in such a way that objects which are more similar are grouped under single clusters and the objects which are not similar are grouped under other clusters. It is the main task of exploratory data mining, and a common technique for statistical data analysis, used in many fields, including machine learning, pattern recognition, image analysis, information retrieval, and bioinformatics.

In this paper, we propose an approach based on parallel processing of batches using the k-means algorithm. In this case, the dataset is split into several batches to satisfy the limitations of the k-means algorithm [9]. The resulting clusters are created in parallel without full memory loading, which significantly speeds up the clustering. The relevance of the work is that the use of small batches reduces computational cost and increases the convergence speed of the clustering algorithm.

Real large datasets are used to evaluate the performance of the proposed approach Mini Batch k-means algorithms.

The rest of the paper describes as follows: Literature Survey describes some of the current knowledge related to the text clustering as well as theoretical and methodological contributions to a clustering method, the Methodology brief about the systematic, theoretical analysis of the methods

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A Novel Privacy Prevention Technique to Protect Intermediate Data Sets in Cloud Environment

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Abstract **– Cloud computing offers huge adding cost and storage capacity which enable users to deploy serious applications. On the migration of serious application to the cloud environment, the malicious parties analyze the intermediate data set and find out the private information stored in the original datasets. In state-of-art techniques, to secure the private information to develop the privacy among all the datasets, the datasets got encrypted, due to that datasets are invisible it becomes hidden, so that it is stated as neither efficient nor profitable because encrypting all the huge data sets leads to cost effective and it is not necessary. In this paper, we propose a new privacy Prevention Technique to Protect Intermediate Data Sets in cloud environments in the way of providing restriction to encrypt the data set. Computation cost is to be reduced and maintain the data holder's privacy requirements in cloud. Moreover, the proposed Modified Cost Reducing Heuristic Algorithm (MCRH) to reduce the preserving cost. In addition, a Modified Sensitive Intermediate Datasets Graph (MSIG) is also introduced to achieve better cost reduction due to identify the necessary intermediate datasets for encryption. The experimental results show that the proposed system is reduced the privacy-preserving cost significantly than the existing approaches.**

Keywords – Security, Cloud Computing, Privacy, Sensitive Intermediate datasets Graph, Encryption.

I. INTRODUCTION

Cloud Computing is an interconnected network which is the combination of internet frame, software and hardware. Recent Networks provides hardware and software to the clients, it also provides the facility to communicate the peoples. These platforms are also simplifying the user difficulties by introducing the graphical user interface (GUI) or API (Applications Programming Interface). Moreover, it provides on demand services that are always on, anywhere, anytime and anyplace. The provision of services like software and hardware are present to the business and public. Cloud computing is an umbrella term used to refer to Internet based development and services [13].

Cloud Computing provides enormous services the taxonomy of services are described as Software-as-a-Service(SaaS), Platform-as-a-Service(PaaS), Infrastructure-as-a-Service (IaaS), Data Storage-as-a-Service (DaaS), Communication-as-a-Service (CaaS) and Hardware-as-a Service(HaaS). The major service providers of cloud computing includes Amazon and Google Apps. These are introduces a new cloud computing service as infrastructure-as-a-service (IaaS) or platform-as- a-service (PaaS). Essentially, cloud environments are classified into three categories namely public cloud, private cloud, hybrid cloud, Distributed cloud and Community cloud. Public cloud user gets accessible rights anywhere and also used for managing cloud resources. A private cloud provides local users an elastic and responsive infrastructure to fare workloads. Hybrid cloud model enables improving local infrastructures with the computing capacity from an external public cloud [13].

This technology approaches encryption techniques to maintaining the privacy of data sets in the cloud essentially encrypt and decrypting of entire data set. Due to this

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Visual cryptography for color Images and its implementation

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Keywords: Visual cryptography, Stenography, Encryption, Decryption, Resolution.

Abstract: ***Nowadays, Information Security is an imprortant issue. There are several conventional techniques which provide Information Security like cryptography and Steganography. Visual Cryptography is different from both conventional techniques. Visual Cryptography deals with providing security for images. Here, Security is provided by dividing the image in to several numbers of shares. Each individual shares wont reveal any information about original image. User can get back the original image by superimposing all the shares. So, the person having access to all the shares can only get back the original image. Visual Cryptography Scheme (VCS) uses combinatorial techniques to encode confidential written materials.***

In this paper we are taking more consideration implementation of visual cryptography, it establishes a progressive mechanism to share color images at multiple resolutions. We extract shares from each resolution layer to construct a hierarchical structure; the images of different resolutions can then be restored by stacking the different shared images together. So this technique enables flexible decryption.

1 Introduction

Visual Cryptography is a confidential sharing scheme which allows visual information like pictures, text etc to be encrypted in such a way that the decryption can be performed by humans without the need of computers. Visual Cryptography is an encryption technique that doesn't require complicated computations to decrypt a message. The cipher text and the key consist of transparencies. When properly stacked these transparencies reveal the plaintext. Visual Cryptography Scheme (VCS) uses combinatorial techniques to encode confidential written materials. The strategy is to transfer the text material into an image and encode this image into n shadow images. The decoding only requires only selecting some subset of these n images, making transparencies of them, and stacking them on top of each other. Traditional confidential sharing schemes like shamir scheme use polynomial interpolation to decrypt the confidential, whereas the decryption of visual cryptography does not require any computations at all. Moni Naor and Adi Shamir first pioneered the visual cryptographic technique in the 1994. In visual cryptography the confidential is an image, and user shares are black and white images printed on transparencies. To decrypt the confidential one should superimpose a number of transparencies. Thus the decryption is realized by human visualization systems rather than computations. The fundamental idea before visual cryptography is utilize of superimposed images to display the confidential. seaparate image can be traeted as a cipher, and the equivalent image may be considered as a key. It can also be treated as a graphical form of one time pad.

Confidential sharing is one type of key establishment protocols. Here the Trusted Authority (TA) divides the confidential into pieces and distributes the pieces to different users. These pieces are called Shares. Shares contain partial information about the confidential. However, shares are constructed in such a way that although the confidential can be reconstructed by combining a number of shares, simply examining individual user"s share will not reveal the confidential information at all. Thistechnique incorporates a share control scheme called Threshold Schemes. In a (t, n)– threshold scheme, Combining of t shares will be able to compute the confidential, coalition of (t-1) shares or less should not reveal any confidential information at all [1].

In this confidential sharing threshold schemes use polynomial interpolation to decrypt the confidential. In visual cryptography the confidential is an image and user shares are black and white pictures. These pictures are usually printed on transparencies and superimposing these transparencies will be able to reveal the confidential image. The visual cryptography shares the same security condition as other confidential sharing schemes: in a(t, n)– threshold scheme, superimposing t shares or transparencies, the confidential image will be revealed; stacking up(t-1) shares or less should not reveal any information about the confidential image at all. However, their decryption process is different. The decryption of visual cryptography only needs superimposing a stack of transparencies. Thus it uses human visualization rather than computation for decryption. This is the major advantage of visual cryptography over other confidential sharing schemes The visual cryptography thus allows a fast visual sharing of graphic objects in a secure way without the need of any reconstruction device, which is used to decrypt

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Security Protocol for Transmitting data in Wireless Sensor Networks

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Abstract

Wireless sensor network is a trend that is growing faster in a decade or so. The data integrity of the WSN's is the critical part of data transmission. The transmission is based on the request of the nodes in return to the advertisement of the data from a source sensor node. Many algorithms are proposed for the integrity of the request (REQ) made by sensor nodes in order to protect the request. we propose an algorithm for giving security for data. The data which is sent back to a sensor node in return to the request made by sensor node has to be integrated by some method to ensure data privacy. Here we make use of a well-known RSA cryptographic algorithm to encrypt data. This provides an integrity constraint for the data .

Keywords - WSN, security, DATA, RSA, cryptograph.

1. Introduction

A wireless sensor network (WSN) is a collection of small nodes for monitoring environmental conditions and storing the obtained data in a central place. They're also known as highly diffused networks of small, insignificant wireless nodes that are grouped in large numbers. WSNs consist of sensor nodes with a radio range and energy consumption and works to achieve a very specific functionality [3].

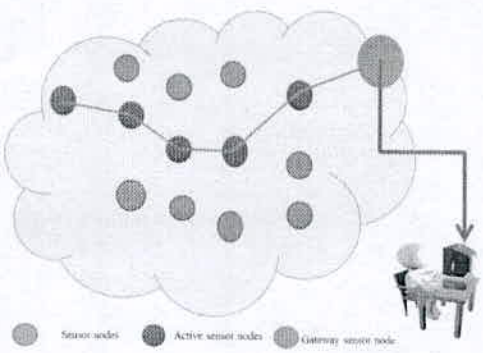

Fig. 1 Typical WSN Architecture

Each sensor node in the fig. 1 has an internal architecture which consists of central processing unit, power unit, sensor unit and communication unit. These small nodes have very low energy consumption, radio ranges and processing power. The important characteristics of WSN are Power consumption constraints, Mobility of nodes, Ease of use, heterogeneity of nodes. The major concern in WSN is power conservation because of their unique power sources they use.

The concept of sink nodes improves the remote access to sensor data that allow them to connect to other networks. When a sensor node shares their inspection and processes these inspections to store the useful, significant information with in them. These inspections can be accessed from sink nodes to examine and control situation by afar.

Sensor network is an autonomous node and has no central control acting on them. There transaction is mainly based on the current information that node has, it's computing ability, goal and resources. In other words, the

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Aadhaar Identity Processing using Integrated Model

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Abstract-*In India with the population of 1.39 billion a Unique Identification i.e. AADHAAR Identification is a major project. This ID is common for personal and Business usage. In 2009 Government of India by Ministry of Electronic & Information Technology established UIDAI(Unique Identification Authority of India). An Integrated approach to secure Aadhaar Identity using Block chain Technology and Convolution Neural Networks. Model is being proposed using Distributed Ledger Technology(DLT) of Block chain Technology(BT) comprised of 3 phases, In first phase Biometric data and Demographic data of AADHAR is used and data reduction is done. In second phase Convolution Neural Networks(CNN)of Deep Learning with ReLU model to secure biometric data from data cloning and face verification. In 3rd phase Block chain Technology(BT) using Distributed Ledger Technology(DLT) is added to have more security to the proposed model. Thus the Security in Aadhaar Identity can be achieved.*

Index Terms— Blockchain, Distributed Ledger Technology(DLT), Convolution Neural Networks(CNN), UIDAI(Unique Identification Authority of India)

1.0 Introduction to Aadhaar Identification

The need for Official Identification emerged with the Digital era. For the Financial services, Banking Systems, Social benefits, Online Transactions, Healthcare, Education etc. needed Citizen Identification. In 2009 Government of India established a statutory body called UIDAI. A Unique Identification of 12 Digit Number with collection of biometric and demographic data was given to every citizen of India. Aadhaar number always with a 2-9 digits it is not by binary digits and it's a random digits which is not fraudulent , thefting of data and better privacy.[2]

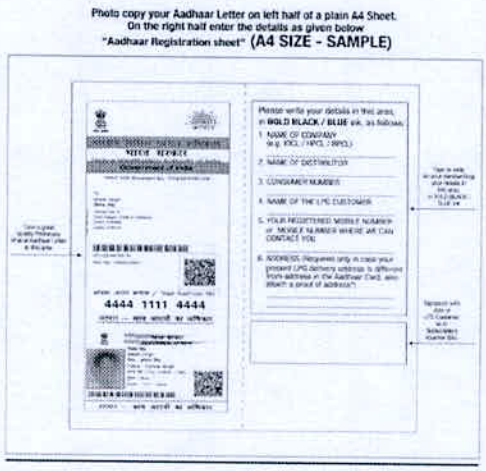
The UIDAI with collaboration of Government of India uses CIDR (Central Identities Data Repository) to issue Aadhaar number to every resident of India. Its robust in pattern Identification and can be authenticated in nearby Trusted Parties deployed by Government. Verification and card issue is postal facilitated. The Letter format comprised of Name, Age, Gender, Address and details to validate document. The mock up copy of Aadhaar card [2] as shown in Fig 1.1

An Aadhaar survey has started in year 2009 till march 2017, with a budget spent on making UIDAI project is approximately 87.939 crore(US $ of 1.4 Billion). [2]

Aadhaar Id Identification method is proposed by the author [1] using supervised learning of Extreme Learning Process and Decentralized application of alternative multiplier path of ADMM.

1.1 How the Blockchain works?

The term Blockchain first coined from a paper "Bitcoin: A peer to peer electronic cash system" published by a scholar or a group aliased as "Satoshi Nakamoto" at the end of 2008.[8] who is a introducer of Bitcoin Crypto currency to the world.



Source:Internet

Fig 1.1. Aadhaar Card Mock up

A Blockchain Technology (BT) is a contemporary approach of Decentralised database System contradictory to the centralized data architecture as CIDR which is governed by Authenticated Agency of India. BT has a DLT to share data or Transaction of currency among all the participants in the Blockchain.

Every transaction in public ledger is subjected to consensus by all the participants in the system of blockchain. The data are permanent and immutable in nature. Each transaction data is updated through verification process so data loss is ruled out.

Bitcoin and Ethereum are the most popular Incentives of blockchain Technology. The important characteristics of blockchain technology are distributed consensus and anonymity.

Keyless Security Infrastructure (KSI) is a feature that helps to overcome the limitations of Public key Infrastructure which is compromised in Securing the Transaction. This is one of the major concepts of Blockchain. KSI uses cryptographic hash function i.e., SHA-256 Hash Algorithm used in Blockchain, security and

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Security challenges and issues in Iot:A Survey

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Abstract: *The Internet of Things (IoT) is current trending technology which plays an important role in connecting the unconnected things and variety of objects into a network to provide services with its constrained nature. As the nature and the components used in IOT is multidisciplinary which has introduced new security challenges. Incorporating security features like authentication, confidentiality, encryption, authorization, network and application based security for devices and the threats involved in IoT is challenging. The main problem in IoT devices is the performance parameter which make it difficult to apply on the already available security method Due to the heterogeneity of devices used in Iot ,and limited resources and ,bandwidth the devices supports only lightweight algorithms. In this paper a survey on variety of attacks, threats on the IoT system and different types of attack or intrusion detection methods.*

Keywords: IoT security,Vulnerabilities ,attacks,Intrusion

I. INTRODUCTION

IoT is a emerging area that is currently booming with a wide applications. IoT[2] is a system of connecting sensors, devices, , physical objects, controllers, actuators, and digital machines and internet that is used for collecting and exchanging data with other devices without requiring human or interaction of human.

IoT is growing rapidly from few years and it is been used in different areas such as cities, healthcare ,houses, roads etc.IOT growth has made as future technology for the upcoming years. The devices used in IOT has sensors which is used to collect data and the data collected is transferred through internet for controlling and monitoring .Data aggregated from real time application is used to take the right decision about the device. The data received through internet has to be converted to the form which is easily understood by the human. By this user's knowledge about the devices will be known.

The architecture of Internet of things as shown in the below figure is based on three layers:

- Physical/perception Layer: In this layer sensors are used which is used to collect data and turn into useful information.
- Network Layer: In this layer the data are collected and aggregated from different sensors is converted to form of data processing.
- Application Layer: In this layer it provides services to the request from the users.

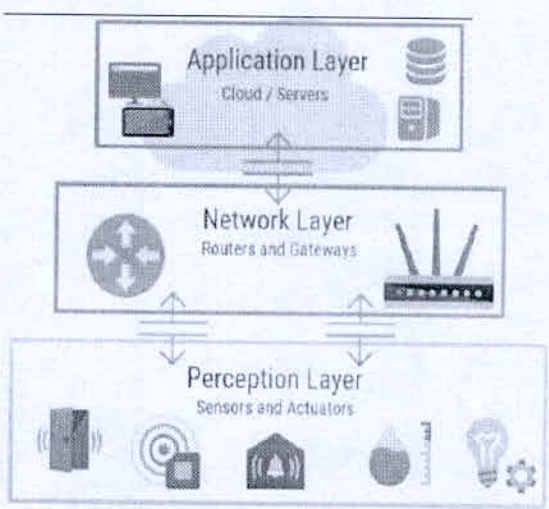

Figure 1:IOT Architecture

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FRAMEWORK FOR STOCK PRICE PROJECTION BASED ON PHIOLOGICAL SIMILARITY GATHERING.

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Abstract- Forecasting quotation prices through traditional information is a upcoming research topic. Quotation price is said to be a typical time series. Recurrent neural network (RNN), long short-term memory (LSTM), and gated recurrent units (GRU) techniques are basically adopted to tackle this kind of information. However, recent related studies have axis on the analysis of isolated stocks, thus giving no importance to the connection between same type of stocks in the total stock trade. This paper proposes a clustering method for mining same type of stocks, which is a combination of morphological similarity distance (MSD) and kmeans clustering. Subsequently, Hierarchical Temporal Memory (HTM), an online studying model, is used to grasp patterns from same type of stocks and make forecast at last, denoted as C-HTM. The experiments on the amount foreseeing show that 1) contrast with HTM which has not listed out same type of stock patterns, C-HTM has good foreseeing perfection, 2) in terms of short-term prediction, the performance of C-HTM is excellent compared to the traditional models.

Keywords- *Machine learning, kmeans, philplogical similarity distance, hierarchical temporal memory, quotation prediction.*

I. INTRODUCTION

The non-random walk hypothesis and the systematic market hypothesis states that traditional quotation information are of prominent commercial value and that the learning of old prices can be used to project new prices [1]–[3]. And also, an encouraging quotation prediction model has been proven to bring reliable benefits to the one who invest and many marketing agencies. Although the stock price prediction job is attractive to researchers, it is still examined to be a exciting problem because the quotation information is real-time, high-noise and nonlinear. Hence, most of the researchers use numerous methods to accomplish a improved accuracy [4]–[7]. Machine learning models have shown more talented predictions than old statistical models such as Autoregressive Integrated Moving Average (ARIMA), a time-series prediction model which exploits alterations. Nabipour et al. [8] evaluated the concert of artificial neural networks (ANNs), recurrent neural network (RNN), long short-term memory (LSTM) and six tree-based models(decision tree, bagging, random forest, adaboost, gradient boosting, and xgboost). The outcomes illustrates that LSTM was the highest executor when compared with other systems. Chen and Zhou [9] employed a genetic algorithm (GA) for feature selection, for improving the perfomance of LSTM. Though, based on our technical knowledge, there is slight research work that gives the information about the issue of relationship between many stocks. Gathering all the older jobs done till now, it shows that their replicas are subjected to overfitting or underfitting, which means that the constraints has to be changed very often. Henceforth, the discussed concepts are very much important for the typical model: 1) Since the information has real-time nature of quotation data, the model can study always and does not need extreme parameter alterations. 2) The model is delicate to input, thus it can study the potential patterns. 3) The model has great robustness and fault tolerance mechanism to adjust to the high-noise information atmosphere. To address the two issues, the technique proposed in this paper is that by means of a clustering technique based on kmeans to discover same type of stocks in the quotation market, which utilizes morphological similarity distance (MSD) as a degree of resemblance, denoted as K-MSD. The MSD has been confirmed to be further appropriate for estimating the resemblance of time series [10]. On top of that, we use Hierarchical Temporal Memory (HTM) model, a biologically-unnatural theory of cleverness originally described in [11], to same stock patterns. HTM afterwards clustering, is considered as C-HTM, has good decision percentage. Moreover, in small range decision, the efficiency of C-HTM is good compared to three baseline models. Important donation of this task is

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An Efficient Underwater WSN as Distributed Database Network implementing for Structured Distributed Storage and extractions

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Abstract- **Before the vast organization of submerged WSN turns into a reality, the test to be met is proficient blunder recuperation in vicinity of high fault likelihood, prolong proliferation postpones and low audio data transfer capacity. The network implementing is a predicting solution to computation potentiality of underwater sensor nodes and broadcast type of acoustic channels. An methodical underwater sensor network as a distributed database and implementing network for structured distributed storage and extractions.**

Distributed storage system gives solid entry to information via excess open out over exclusively temperamental nodes. Application situations incorporate data centers, shared capacity frameworks, and capacity in wireless networks. Putting away information utilizing an eradication code, in parts spread crosswise over hubs, requires less excess than straightforward replication for the same level of dependability. Then again, since pieces must be intermittently supplanted as hubs fall flat, a key inquiry is the way to create encoded parts in a disseminated manner while exchanging as meager information as would be prudent over the network. We present an idea of recovering codes, which permit another node to download *function* of the put away information from the surviving nodes.

Keywords- **Underwater Sensor Network; Distributed Storage System; Network Coding;**

1. INTRODUCTION

More than 70% of the surface of the earth is secured by water. In spite of years of exploration, numerous discriminating submerged applications, for example, oceanographic information accumulation, contamination checking, strategic reconnaissance applications, remain truly constrained. The investigations of [2–6] overview major limitations, potential applications, difficulties and future exploration headings in submerged situations. They call attention to the perfect channel to amphibian applicative is submerged sensor system (UWSN) [4]. Be that as it may, the qualities of UWSNs, for example, low data transmission, long engendering postponements and high blunder likelihood, are altogether unique in relation to those in physical sensor network.

The reason for distributed storage systems is to store information dependably over drawn out stretches of time utilizing conveyed gathering of capacity noess which may be independently inconsistent. Applications include capacity within substantial server farms as well as shared stockpiling frameworks, for example, Ocean Store [7], Total Recall [8], and DHash++ [9], those utilization nodes over Internet for circulated document stockpiling. In wireless sensor network, getting solid stockpiling over problematic bits may be attractive for vigorous information recuperation [10], particularly within cataclysmic situations [11].

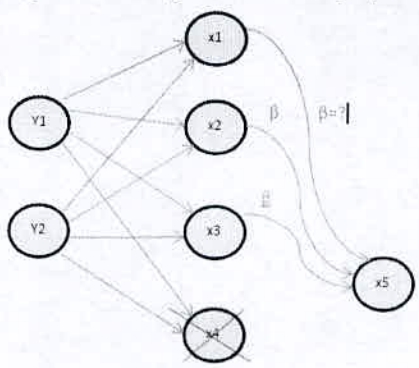

Fig. 1. The repair problem: Node x5 generates fragments as x1, x2…x3 when node x4 fails.

Within every one of these situations, guaranteeing unwavering quality requires presentation of excess. Most straightforward type of excess is replication, which is received within numerous down to earth stockpiling frameworks. As a speculation of replication, deletion coding offers better stockpiling productivity. For example, we can partition a record of size M into k pieces, each of size M/k, encode them into n coded pieces utilizing a (n, k) most extreme separation distinct (MDS) code as well as store them at n nodes. At that point, first document can be recuperated from any arrangement of k coded pieces.

This execution is ideal as far as redundancy–reliability tradeoff within light of fact that k pieces, each of size M/k, gives base information to recuperating the record, which is of sizeM. A few outlines [8], [4], [5] use eradication codes rather than replication. For specific cases, eradication coding can

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Survey on Image Enhancement Techniques

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Abstract: Image enhancement is considered as one of the most important techniques in image processing. The main aim of image enhancement is to enhance the quality and visual appearance of an image, or to provide a better representation for future automated image processing. . One of the most important stages in medical images detection and analysis is Image Enhancement Techniques. It improves the clarity of images for human viewing, removing blurring and noise, increasing contrast, and revealing details. Many images like medical images, satellite, aerial images and also real life photographs suffer from poor and bad contrast and noise. It is necessary to enhance the contrast and remove the noise to increase image quality. The existing techniques of image enhancement can be classified into two categories: Spatial Domain and Frequency Domain Enhancement. In this paper, we present an overview of Image Enhancement Processing Techniques in Spatial Domain. More specifically, we categories processing methods based representative techniques of Image enhancement. Thus the contribution of this paper is to classify and review Image Enhancement Processing Techniques as well as various noises has been applied to the image. . It will be useful and easier to improve the quality of the respective image

1. Introduction:

For improving the quality of the image and to give better input for processing the image, we use image enhancement technique. Based on this, the enhancement techniques are categorized into two types: 1. Spatial domain methods: In this method, the operation takes place directly on the pixels of the image which in turn leads to contrast enhancement. 2. Frequency domain methods: In this method, the operation takes place on the Fourier transform of the respective image. Real time solutions are carried out in spatial domain, because it is very simple, easy to interpret and mainly the complexity range is very low. Robustness and imperceptibility factors are the two major criteria which is lacking in spatial domain. The assessments of functions are performed with respect to frequency in frequency domain method for the purpose of increasing the quality of the image. It works on Fourier transform, discrete cosine and sine trans-form of the image. By using this method we can improve the quality of the respective image by making changes in the transform coefficient functions. The advantages of frequency domain image enhancement include low complexity of computations, manipulating the frequency coefficient of an image and by the application of improved version of domain properties. The major drawback of this method is it cannot produce clear picture of back-ground. That is basically it cannot enhance all the parts of the image. It can focus only on particular parts. Noise removal from the image plays a vital role and it is also one of the most important tasks in applications such as medical field, in which the noise free images will lead minimum error detection. Filtering is a technique which acts as a tool for removing the noise present in the image. The paper presents the narration of spatial domain techniques, different type of noises and the filters applied to the noises.

2. Spatial Domain Filtering Techniques

Inadequate amount of processing tools are required for spatial domain technique and mainly it requires very less computation time. This process is done by using the mathematical formula, and it is denoted by the Eq. (1).

$$g(x,y)=T[(x,y)] \quad (1)$$

Where

$f(x,y)$ corresponds to the image which is taken as input,

$g(x,y)$ corresponds to image which we obtain as output,

T denotes operator which is defined on f applied over a neighboring point$(x, y.)$

Here by using this technique, we can reduce the noise by applying this operator to the single pixel of an image or to different set of images. The spatial processing includes basic intensity transformation functions. The respected value which is obtained from the function is given in the expression of the form in Eq. (2).

$$S = T(r) \quad (2)$$

The pixel value(r) is mapped with pixel value(s) by using the transformation T. Intensity transformation involves three types of transformations which are used for image enhancement process. They are:

- Linear- negative transformation.

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Study of Checksum for Data Integrity Verification in a Network

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Abstract

The actual procedure which yields the checksum, given a data input is called a checksum function or checksum algorithm. . Checksum is calculated based on the message ASCII values and a parity bit is assigned at the end there by the receiver can verify by using the same parity value to achieve the integrity. Here we propose a tool that maintains the client and server authentication, and both prove the integrity by using the parity polynomials (CRC'S). Here we propose a technique in which the message is encrypted using some hashing algorithm and appending the parity bits generated by polynomial checksum and the name process is done at the receiver side (client side) during decryption process and hence achieving an integrity of data during data communication.

Keywords-Parity, Checksum, Polynomial, CRC (Cyclic Redundancy Code's), XOR (Exclusive OR).

I. INTRODUCTION

A common way to improve network message data integrity is appending a checksum. Although it is well known that cyclic redundancy codes (CRCs) are effective at error detection, many embedded networks employ less effective checksum approaches to reduce computational costs in highly constrained systems. (Even high-volume embedded networks cannot typically afford to have custom hardware built for CRC support.) Sometimes such cost/ performance trade-offs are justified. However, sometimes designers relinquish error detection effectiveness without gaining commensurate benefits in computational speed increase or memory footprint reduction. Embedded control networks commonly use checksums to detect data transmission errors. However, design decisions about which checksum to use are difficult because of a lack of information about the relative effectiveness of available options. Here the error detection effectiveness of the following commonly used checksum computations: exclusive or (XOR), two's complement addition, one's complement addition, Fletcher checksum, Adler checksum, and cyclic redundancy codes (CRCs). A study of error detection capabilities for random independent bit errors and burst errors reveals that checksums are suboptimal for typical network use. Instead, one's complement addition should be used for networks willing to sacrifice error detection effectiveness to reduce computational cost, the Fletcher checksum should be used for networks looking for a balance between error detection and computational cost, and CRCs should be used for networks willing to pay a higher computational cost for significantly improved error detection.

II. LITERATURE SURVEY

A checksum is an error detection mechanism that is created by "summing up" all the bytes or words in a data word to create a checksum value, often called an FCS in networking applications. The checksum is appended or prepended to the data word (the message payload) and transmitted with it, making this a systematic code in which the data being sent is included in the code word unchanged. Network receivers recompute the checksum of the received data word and compare it to the received checksum value. If the computed and received checksum match, then it is unlikely that the message suffered a transmission error. Of course, it is possible that some pattern of altered bits in the transmitted message just happens to result in an erroneous data word matching the transmitted (and also potentially erroneous) checksum value. There is a trade-off among the computing power used on the checksum calculation, the size of the FCS field, and the probability of such undetected errors.

Commonly used checksums generally fall into three general areas of cost/performance trade-off. The simplest and least effective checksums involve a simple "sum" function across all bytes or words in a message. The three most commonly used simple "sum" functions are XOR, two's complement addition, and one's complement addition. These checksums provide fairly weak error detection coverage but have very low computational cost.

Because CRC computation is so expensive, two intermediate-cost checksums have been proposed for use in nonembedded networks. The Fletcher checksum [16] and the later Adler checksum [15] are both designed with a goal of giving error detection properties competitive with CRCs with significantly reduced computational cost. In the late 1980s, Nakassis [17] and Sklower [18] published efficiency improvements for Fletcher checksum implementations that also are useful to speed up one's complement addition checksums. Although Fletcher and Adler checksum error detection properties are

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An IPFS-Blockchain driven Healthcare; an Application towards an Optimized Secured and Decentralized Data sharing for e-Health Services: A Comprehensive Literature Review and Future Scope

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ABSTRACT- Growing population demand the need to bring revolutionary changes in all aspect of health care as time and technology progress. Quality healthcare services backed up with the block chain technology is the need for a more patient-centric approach today. An analysis of the state of the art blockchain research in the field of healthcare using IPFS and smart contract is conducted. A high performance distributed information system is deployed and a micro service based architecture implementation is carried out where in the digital contents are stored on the IPFS and the IPFS hashes are stored into the blockchain smart contracts to provide traceability and authenticity. This study aims to realize a framework where healthcare record management can be done in a secure, tamper proof environment. Further the study promotes a feasible and optimized access control that can help prevent data breaches and reliable method of recording, storing and sharing sensitive data. Thus, proposes a combined IPFS- blockchain based solution to solve the authenticity and originality of digital content posted liberally on the internet.

Keywords— *IPFS, Blockchain, EHR, Smart Contracts.*

1. INTRODUCTION

Blockchain technology is a substantial technology that has garnered interest in healthcare industry. As a technology, Blockchain is secure, distributed database which operate without a central authority or administrator [1]. It is a peer-to-peer and distributed network that makes a continuous, list of ordered records known as blocks to create a digital ledger [1].Blockchain improve the authenticity and transparency of healthcare data and also maintains permissions in electronic health records (EHR) to streamline claims processing[2].

For large data and digital content, Blockchain seems to be expensive technology. To overcome large data and content, Inter-Planetary File System is one such solution. IPFS, an open source, distributed, content addressable, peer-to-peer, decentralized file system to store data and large files with resiliency, integrity with high throughput [3].IPFS file system is one such solution. IPFS, an open source, distributed, content addressable, peer-to-peer, decentralized file system to store data and large files with resiliency, integrity with high throughput [3].

IPFS as a Github repository commit hashes, IPFS hashes always point to the same immutable files. The proposed solution attributes on the traceability and authenticity of the data stored, reflected by IPFS hashes that are stored into the blockchain smart contract. The documents stored on the smart contracts can be effectively accessed by hash generated on storing the documents to IPFS. For, any change encountered in the content of the digital document, the hash changes, implies the original content altered or modified. Managing ,Production and distribution of the data without permission provided by the original work is attributed as specified on the dominant for the industry to develop a well-decentralized system in the health care area.

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USE OF GRAPH THEORY IN BIG DATA HANDLING AND KNOWLEDGE ENGINEERING

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Abstract— **Using of devices like phones, software logs, camera, microphones, wireless sensor networks led to the generation of huge amount of data. Standard techniques cannot be used to handle these because of huge volume, velocity and variety. So, graph-based technique is used in which nodes and relation among them can be represented clearly.**
Graph is used in various applications like web technology, linked data, large scale data analytics, and cloud computing. Use of graphs have been spread by application like Google. However wide use of graphs has hampered the knowledge. However, to solve this we need to understand the basic terms of graphs.
Graphs are used in various applications like social networks, web search engines, and genome sequencing. However, while processing graphs pattern matching is required. Much work has been done in this field with solutions like sub-graph isomorphism and regular expressions matching. Many algorithms are used. We study the impact of these algorithms.
The knowledge suit is ontology based since the network is represented in the form of relations. The steps included are catching client data, knowledge creation and insertion and retrieving. In knowledge creation, representation is based on relation between components. Usage of tabular data creates problems while using tools and vision. In order to overcome these drawbacks, we use software implementation. Such software offers filtering and selection of resources to give way to isolation of small things.
In deep learning and artificial intelligence, the data, relation, symbols, representation and so on are very complex. They can be understood only by experts. Hence, graphs are used.

Keywords:

GRAPH, GRAPH ANALYTICS, GRAPH TOOLS, ANALYTICAL TECHNIQUES, KNOWLEDGE GRAPHS, KNOWLEDGE BASES, ONTOLOGIES, KNOWLEDGE REPRESENTATIONS, SEMANTIC WEBS, BIG DATA, DATA MINING, INDEXING GRAPH DATABASE, GRAPH SIMULATIONS, PARALLEL AND DISTRIBUTED ALGORITHMS, EXPLAINABLE ARTIFICIAL INTELLIGENCE, DEEP LEARNING.

I) INTRODUCTION

The handling of big data is a challenge. The first challenge is volume. The data is in huge amounts in terabytes and petabytes.
1 petabyte=1024 terabytes.

The second challenge is variety. Data is classified into:

1) Structured
2) Unstructured
3) Semi-structured

Structured data is stored in the form of spread-sheets and relational database. Unstructured data are in the form of text, images, videos. Xml comes under semi structured data which does not have specific standard. The third challenge is velocity. Applications like smartphones, social networks, e-science, healthcare systems generate data of huge velocity and so difficult to be queried.
Deep learning is an important field in Artificial Intelligence. In every field, their models are opaque and hence difficult to be understood.

BOSS: A study on Efficient OS for Secure and Multilingual E-Governance Services

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ABSTRACT-The open source (OS) projects are gradual increase in the recent times and they are becoming more and more in number in technical word making big contributions in these projects so as to make profits from their investments. This is made possible by the development of indigenous projects by various IT Sectors, local companies, small and medium scale IT industry and government sectors. These public and private sectors are investing in Free and Open Source Software projects to fulfil their routine needs by customizing the traditional Open Source projects like LINUX Distribution. One of such effort is the customized version of LINUX called Bharat Operating System Solutions popularly known as BOSS. This is an initiative taken by Government of India to launch its own operating system parallel to the world wide famous operating system known as Windows OS. BOSS support in different languages used/spoken across the country India and is a very user friendly GUI based operating system. India is a land of different cultures, religions and languages and also every state in India has its own language. On this point of view BOSS becomes very important in the country because of its multilingual support for different states and hence different languages in the country.

1. INTRODUCTION

Other countries decided to move from windows OS to Linux OS with in the year 2022 because of security and open source (free) available OS. Bharat Operating System Solutions BOSS is free Linux distribution was developed by the National Resource Centre for Free and Open Source Software (also called as NRCFOSS) of India. The latest version 8.0 (Unnati) released on 15 October 2019 is considered as India's Desktop computer, Laptop, Education, and Servers, It is coupled with Cinnamon Desktop Environment. BOSS release aims is to developing a e-Gov technologies on FOSS, which seeks to build up a FOSS community across industries, government and academia thus drive the growth of FOSS in India leading to a growth of eco-system for FOSS in India. Aims of the release is best in The user experience in desktops and laptops with latest applications. Requirements of the recommended pc is 2 Ghz dual core processor or 2 GB RAM and Over 40GB of free hard drive space. The Govt. of India has

Approved BOSS for implementation in a large scale. It was developed at C-DAC, Chennai INDIA. This Advanced Computing popularly known as C-DAC is the premier R&D organization of the Department of

Aim of this organization like, Electronics and Information Technology, Ministry of Communications & Information Technology (MCIT). Is to carry out research & development in the field of Information Technology, Electronics and its related areas.

BOSS is available in several Indian languages which are spoken across the country. These languages are Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Maithili, Malayalam, Manipuri, Marathi, Odia, Punjabi, Tamil, Telugu, Urdu, Arabic, Persian, and Sanskrit. The languages not supported by BOSS are Nepali, Sindhi, and Dogri. The aim of this paper is present is to implementation of BOSS in Government, private and business sector in India focusing on different applications areas.

The current expectations and experience from the previous implementations in the recent years are taken into account. Also, the future for the developments are discussed. To understand and examine the value of BOSS and its influence on the professional world the various government bodies like public sectors, education sectors etc. are taken as subjects for analysis.

REVIEW OF LITERATURE

This study discusses about the history and motivates things related with the Bharat Operating System Solutions. India is different cultures, religions and languages Almost every state in India has its own language. With this point of view BOSS becomes very important in the country because of its multilingual

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ADVANCED IOT BASED GARDENING SYSTEM

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Abstract

This project aims at developing an auto irrigation/gardening system with raspberry pi. This system is easy to manage as all the users should be able to login by Smartphone and access the condition of garden. These features a sense that a user can access the parameters of the land such as moisture, temperature etc and can also water flow can be controlled, as well as supplies the water when required. In the system to be implemented, the data that is soil moisture, temperature, humidity, sunlight are logged into the Microcontroller. Web Server running on raspberry pi receives this data and can transit to the mobile phones or any other device, which requests the data. Based on this obtained data the end-user can then control the system, remotely. The extra feature of the model is that the user will ensure if his/her need of the plants, herbs are served based on the right need and there is over/under usage of the water. A Web-Server along with a web page will help in user being notified about the requirements of the water when required.

Keywords—Raspberry Pi, Microcontroller, Web-Server

1. Introduction

The large portions of land are used by the farmers to grow different types of crops. keep a constant eye on a irrigation/garden land. Sometimes a small portion of land receives excessive amount of water which leads to water logging. In this case the crops or may be some plants in the land get damage and the a farmer may suffer heavy loss.

To overcome this problem, we have proposed an "Advanced IOT (Internet of Things) based irrigation/gardening system using Raspberry Pi". This is a really handy project that allows the user to regulate and monitor his water supply from his current location.

This paper discusses the notion of sensors and how they are used in the creation of the Internet of Things (IoT).

The physical parameters of soil are determined using temperature, sunlight, and moisture sensors. Several analog and digital sensors, such as light, temperature & soil moisture, which are used to collect real-time data. After that, the sensors will be connected to an Arduino microcontroller.

Web Server running on raspberry pi receives this data and can transit to the mobile phones or any other device, which requests the data. Based on this obtained data the end-user can then control the system, remotely.

2. Methodology

Fig.1 below shows the block diagram of Advanced IoT based gardening system using Raspberry Pi.

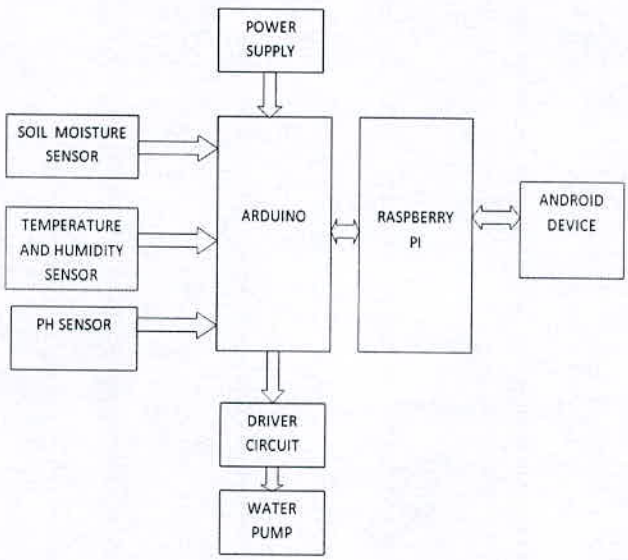

Fig1: block diagram of Advanced IoT based gardening system

We make use of moisture, temperature, Photoresistor sensors. All these sensors will be

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Cancer Prediction model using Decision Tree

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Abstract

Abstract— Day by day cancer patients are increasing across the world. Since, Cancer cell grows and divide with extreme rapidity. Curing the cancer diseases is a very big challenge in the medical field. Late stage cancers are very difficult to cure. But in general the earlier a cancer is found, the higher the chance of cure. Early stage cancers are small, localized and highly curable. But identifying cancer disease in the early stage is not simple. So, this paper proposes an application named early prediction of cancer diseases using decision tree algorithm. Our proposed system can be used to diagnose the cancers of lung, oral, chest, cervix, stomach, and breast. To classify the facts and to mine common styles in dataset selection regulations are used. It is used to mine the common styles from the facts set, hazard rankings are taken into consideration for the attributes that constitute the widespread styles and affiliation regulations are framed for the symptoms. This version facilitates in early prediction and detection of most cancers earlier than going for medical and lab checks that are luxurious and time-consuming. This model used in the hospitals and clinical laboratory and in the healthcare environment for early prediction.

Keywords: Data mining, Decision Tree, Risk Score, Significant Patterns, Missing Values, Imputation, Accuracy.

1. Introduction

Among all diseases, cancer is one of the most common causes of mortality. While there have been several attempts to reducing the disease's deaths, early discovery are seen to be the best step toward effective treatment. Cancer is a potentially lethal illness produced mostly by environmental factors that cause mutations in genes that code for important cell-regulatory proteins. As an end result of the odd mobileular behavior, increasing clumps of odd cells form, which harm surrounding regular tissue and might unfold to key organs, ensuing in disseminated illness, which is often a signal of drawing close affected person death. More importantly, the globalization of dangerous behaviors, mainly cigarette smoking, and the popularity of many elements of the present day Western diet, which can be wealthy in fats and negative in fibre, will growth most cancers rates. According to the World Health Organization, most cancers claim the lives of eight million human beings every year, accounting for 13% of all deaths globally. Over the following decades, a 70% growth in new most cancers instances is projected. Overall 100 types of cancer exist each requiring unique treatment and diagnosis. The most commonly diagnosed cancer worldwide is of the Lungs (1.8 million, 13% of total) Breast cancer (1.7million, 12% of total) Lung cancer is the most often diagnosed cancer worldwide (1.8 million cases, or 13% of all cases) (1.7million, 12 percent of total) Colorectal cancer is a type of cancer that affects the (1.4 million, 9.7 of total). Lung cancer is the most common cause of mortality from cancer (1.6 million, 19.1 percent of total) Cancer of the liver (0.8 million, 9.1 percent of total) Cancer of the stomach (0.7 million, 8.8 of total).

Figure1. World Cancer Statistics

Due to population expansion and ageing, it is predicted that by 2020, there would be a rise of 19.3 million new cancer cases each year. Cancer is one of the leading causes of death in many countries throughout the world. The total cancer cases across worldwide statistics have been given in the figure.

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Coronavirus: Disease Pattern Study dependent on Semantic-Web Approach utilizing Description Logic

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Abstract— **Description good judgment elucidates statement the use of the methodology of reasoning. Description logic blended with semantics forms the valuable Description good judgment ontology. Numerous researches have depicted semantics of Description common sense, the use of concepts and roles. In this paper, the disease pattern with admire to pandemic COVID-19 is studied. The proposed examine ambitions to deliver semantically wealthy that means to the disease sample of COVID-19. The outbreak of Coronavirus has deeply devastated all forms of human pursuit. The principle goal of our paper is to use description logic Ontology and the semantic web-primarily based approach to put off ambiguity developed around spread of COVID-19. Semantics combined with Description common sense, therefore serves the reason of offering which means to words, in order that their interpretation is correctly performed. In this paper, proper reasoning is furnished to statistics in order that they can be depended on without any further doubt or notion.**

Keywords — Ontology, Semantic Web Engineering, COVID-19, Description Logic,

I. INTRODUCTION

Semantics validate and govern policies to store the facts and manipulate it as and whilst required. It is imparted suitable meaning in order that it's far properly understood, without any hassle. This is confirmed with the contemporary pandemic of COVID-19 disorder sample. Semantics validate and govern guidelines to keep the statistics and manipulate it as and while required. It is imparted appropriate that means so that's why properly understood, without any trouble. This is confirmed with the present day pandemic of COVID-19 disease sample. This paper, the case examine of COVID-19 is taken as far defined the use of Description good judgment (DL)[1] and semantic net-primarily based technique. Primary aim is to offer a reasonable method to the ailment sample of COVID-19,

Using DL standards and position utilization [2]. DL [3] uses reasoning to understand, remedy, diagnosis and different extra records regarding the family and form of virus. The data to be had is within the form of herbal language this is translated into axioms to create an ontological version primarily based on novel.

DL version the dating between different entities. Entities are put into three categories: individual names, roles, and ideas. names function constants, they may be used to depict single people. Roles depict relationship among individuals and ideas alternatively, depict a large set of individuals.

Ontology [four] defines representational entities with which the domain of knowledge gets modeled. inducement behind this ontology examine is to deepen the research the usage of DL [five] which presents more insightful structure of the hassle. DL allows in breaking inferences which can be used for powerful choice making. addition, DL ontology makes it possible to logically deduce information to collect records from them and check their consistency. DL ontology is nothing however axioms which might be real in line with the given situation and state of affairs.

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Computations in IoT-A Hope for Health Care System

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Abstract

One of the most notable technological results in Computer Science and Electronic engineering have been merged, Internet of Things (IOT). The term IOT refers to the network of physical objects that are embedded with sensors, hardware, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. In the last few years the impact of IOT in healthcare has been significantly increased .In healthcare domain to increase reliability, accuracy and productivity IOT is playing a crucial role. With the population increasement health issues are also rising and the necessity of technological solution is demanded. IOT redesigning modern health care with promising technological, economical and in social aspects . This is where IOT plays a big role.

Keywords – Internet of Things; Healthcare; issues; applications; computer science.

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I. INTRODUCTION

In the progression of social protection monitoring system Internet of things has transformed into an authoritative segmented block. To enhance progressing remote sensing of the patient prosperity condition, to foresee essential conditions of the patient, and for improving individual fulfillment a powerful IoT therapeutic administrations system is used. Conventional strategies for giving security cannot be straight forwardly executed in IoT, as a result ,various models and correspondence stacks are included. As a feature of medicinal data frameworks that must guarantee different critical security necessities together with honesty, secrecy, accessibility, non-disavowal, confirmation, approval, and responsibility to verify therapeutic effect of data without influencing the proficiency of administrations and protection of patients' information by Data and communication technologies(ICTs) are conveyed. Worldwide maturing and the commonly

Secure and optimal performance for data in cloud by fragmentation

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Abstract- Nowadays data is being outsourced to some third party the way it's carried out in cloud computing which is giving rise to many security concerns. In cloud there is risk of attack by some other user's and nodes due to which there might be data compromise. Hence there is requirement of huge security concern in order to secure the data on cloud. But still whatever the security plan is applied, it should consider optimizing the data retrieving time. Splitting and multiplication of data on cloud for secure optimal performance is proposed to achieve the optimization in performance and security concerns in the cloud. In the proposed method file is divided into units of data and the fragmented data in the cloud nodes is replicated. Only one unit of specific data file is stored in every nodes which ensures that even if there is any attack then attacker will not come to know any meaningful data. To avoid in helping the attacker in guessing the nodes location storing the chunk of data, these are dispersed with some distance by means of graph T-coloring. This proposed method is not dependent on any of the old cryptographic techniques for securing the data hence it is cost effective. It's shown that the probability to trace and find out the attacker node which stores the unit of data in one file is minimum. The proposed method working performance is compared with other schemes. There was an observation of high level security and little performance overhead

Keywords- DROPS, Replication, Drops methodology

I. INTRODUCTION

Cloud computing gives the information, software and computation of a user to distant services. Cloud computing includes system hardware and application software resources as third-party managed services produced accessible on the Internet. Typically, these services provide advanced server software and high-end network access. The cloud computing is one of the most trending technologies for growing software industries and also public organization using the cloud services as platform. Presently roles-based access control (DROPS) models is very popular model in the business system area. Also in the model have major is security issues when access to the cloud server. A typical model is (DRPOS) uses to guidance monitor running on the information server to implement authorization. Otherwise the server in cloud is out of control the business domain. to developing an efficient data security mechanisms for the cloud-associated enterprises system has more challenges First things is in cloud storages is encryption operation is major techniques to used to store information with securely .the cloud security alliance suggesting that brilliant methods of improvising information protection are keeping data in the form of cipher text. And also typical encryption method. Such as public key-encryption and identity based encryption can care to maintain the information integrity, then unauthorized person cannot access the information is encryption in the next proposed as internally access policy and have capable to authorize any client associated on the access policy, confidentiality and access control could be achieves information its self o them then we have a strong believe on un trusted cloud servers. It's the one important type of providing protections model, id associated to as self-contained data protection here the authors says it's not only decreases the dependences on the cloud servers

The rest of this article is structured as follows: Section II describes Literature survey. Section III briefly reviews the proposed system. Section IV summarize the results. Section V conclusion.

II. LITERATURE REVIEW

[2]Juel etal. introduced a methedology to makesure the integrity, originality and availability of information in acloud. By the Iris file system, the transfer of information to the cloud is performed. The gateway is created and utilized in the company that ensures the resilience and reality of the information using a Merkletree. The files denies, M.A.C address, and version numbers are kept at different phases of the tree. The amount of data loss in case of tempering as a result of interference by virtual machines cannot be minimised. [3] G. Kappes, A Hatzieleftheriou, and S.V. Anastasiadis. To obtainable the unrealistic and multi-subscribers associated problems for storing of data in the cloud by using the shared storage and authorization. The Dike authorization architecture is used which combine the concept of controlling the localaccess and name space segregation of occupant. [5] D. Zississ and DLekkas, [5] presented supplying security services in the cloud utilizing a trusted third party. The level of belief in the data integrity, authentication and confidentiality of information increases by using the public key infrastructure and the interaction between the parties. The certification authorities manage the generation of keys. At the userlevel, the use of character evidence of devices, such as smart cards was suggested to store the keys. [6] D. Borus, D. Kliazovichs, F. Granellis, P. Bouvrys, and A. Y. Zomayas, proposed data replication of energy-efficient in

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SMART DIESEL GENERATOR CONTROL AND MONITORING USING ANDROID APPLICATION

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Abstract - The traditional technique of monitoring an electric generator was through regular checks on the generator's variables: oil, temperature, voltage and frequency on a daily basis. Therefore, keeping a normal cycle of performance requires hard work and is often imprecise. The paper presents the solution for the aforementioned issues and more. The idea is to initialize an application that monitors electric generators wirelessly, using the famous Smart Phone operating system Android. The implemented sensors deliver analog signals that provide real time data about the generator's status. These data are converted and programmed though the Arduino micro-controller, which outputs the results in its digital state and then transforms the output into a serial signal, transmitted to the android phone, through IOT technology. Thus, a live feedback of the state of the generator is assured. This project is the first step towards the combination of systems monitoring locally using 16X2 LCD and monitoring remotely using IOT cloud service because it revolutionizes the ideology of monitoring and displaying real time data which can be implemented in various fields depending on different needs. Such fields include electricity, mechanics, and communication. The main limitation faced was the lack of advanced electronics, and technology.

INTRODUCTION

Electric generators play an essential role in majority of today's economic fields, as they are the main element that powers up the whole system of modern life. Since the glue holds the design of the 21st century, technological dependency is extremely crucial[1], monitoring these generators is a major and important issue that factories are facing, to overcome this every factory must have a maintenance team to check up on the vitals of the generator in a daily, hourly and cyclic manner which requires a lot of hard work. [2],[3]In addition to this, inaccurate data readings become a problem due to the lack of automation. To facilitate the whole process and to resolve the aforementioned problems, the solution is presented by building an android application that can monitor the live conditions of the generator including fuel level, temperature, frequency and voltage values. This paper presents a new application in the domain of embedding various systems, aiming for the advancement and contribution to the technological world present. And finally, to provide a smart and creative solution that can help and initiate a boost to the field of wireless monitoring.

A diesel electric generator is the combination of a diesel engine with an electric generator (often an alternator) to generate electrical energy. Diesel generator sets are used in places which lack connection to the country's main power grid, [4] they are used as emergency power-supply devices if the grid fails and also used for more complex applications such as peak-lopping, grid support and export to the power grid. Sizing of a diesel generator is critical to avoid low-load or a shortage of power and is complicated by modern electronics, specifically non-linear loads". Diesel and gaseous-fueled generators each offer advantages to consider when designing a standby power solution [5]. By comparison, diesel-fueled generators provide access to backup power in remote areas that do not have a gaseous-fuel infrastructure. When applied to standby power applications, a diesel-fueled generator delivers a lower capital cost per kilowatt of electricity than a gaseous-fueled generator [6] . Attempts to lessen this disparity, such as converting industrial diesel engines to gaseous fuel, only add engineering costs to the project. As a result, diesel-fueled generators have a capital cost advantage over their spark ignited counterparts in larger standby applications, making

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IOT BASED SMART POWER MANAGEMENT SYSTEM FOR BUILDINGS

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Abstract: Thanks to internet, as one of indispensable parts of our lives, many devices that we use in our daily lives like TV, air conditioner, refrigerator, washing machine, can be monitored and controlled remotely by becoming more intelligent via Internet of Things (IoT) technology. Smart Home applications as one of the elements of smart cities, are individually the most demanded application without question. In this study, Smart Energy Management (SEM) system, based on Node MCU and Android, has been designed for SEM, which is a part of the smart home application. With this system, household energy consumption can be monitored in real time, as well as having the ability to record the data comprising of operation times and energy consumption information for each device. Additionally, it is ensured to meet the energy needs on a maximized level possible, during the hours when the energy costs are lower owing to the SEM system. The Android interface provides the users with the opportunity to monitor and change their electricity consumption habits in order to optimize the energy efficiency, along with the opportunity to draw up of a daily and weekly schedule

I. INTRODUCTION

IoT is a term, which was first suggested by Kevin Ashton in 1999 [1]. IoT is a communication network where the objects are connected to each other or to larger systems. This network converts billions of data, obtained from various devices that we use in our daily lives, into usable information [2]. According to CISCO report, while there were 500 million interactive devices in 2003, it is estimated to be 50 billion by 2020 [3]. This shows that the cities, where we live with IoT, will turn into smart cities keeping pace with more energetic and planned lives [4]. This conversion will also offer many opportunities to us for making our lives easier [5]. Smart Home is a term that is widely used in order to define a living space with lighting, heating, air conditioner, TV, computer, entertainment, audio-visual systems, security and camera system that can communicate with each other [6]. It is placed in the center of our lives with regards to many areas like the TV, audio-visual system in our houses to run once we get home, lighting and electrical devices to be controlled remotely [7], heating system to run via our cell phones by receiving location details [8], as well as making adjustments automatically based on the regional weather conditions [9], monitoring and controlling the power consumption of such devices as refrigerator, air conditioner, furnace, etc. [10], garden irrigation process to be carried not based on the time, but on the humidity level of the soil [11], patients that require continuous monitoring to have a safer life with wearable medical devices [12], smart farms practices [13] and smart grids [14]. In this study, our objective is to reduce the energy consumption with a proper operation planning, by monitoring the energy consumption of a house. In line with this objective, and IoT-based smart energy consumption monitoring and energy management system has been designed. Thanks to the system with Android interface, user can get consumption information of all electrical devices in the household instantly. Using the dish washer, washing machine and dryer, which has the flexibility to be used during the day, to be operated as planned before and during the hours with lower energy costs, helps reducing the energy costs. The energy consumption data for each and every device, which are used with this application, can be taken under record. Owing to this, the measures to be taken for ensuring energy saving will be even easier. It allows the Android interface users, to have the ability to control the devices in their houses via remote access. Additionally, android application has the ability to send notifications via e-mail, twitter, etc. for pre-designated failure codes like over-current, short-circuit, over-temperature and power cut-off, along with such real time data for the devices as current, voltage and power.

The main contribution of this study is presented below.

- Designed as an IoT-based SEM system for home energy management, which is part of smart grids.
- With SEM system, operating hours of electrical household appliances are programmed, considering user comfort and PAR value.
- Having flexible operating hours, loads such as washing machines, dishwashers are shifted to periods where energy costs are low. Therefore, total amount of energy and energy cost is reduced.
- The operating conditions of the electrical household (active, passive, fault etc.) can be monitored in real time via the android based user interface.

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SPWM drive for Single Phase Induction Motor

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Abstract— **Transportation systems, textile mills, fans, pumps, and other industrial and home uses all require motion control. "Drives" are the systems that are used to control motion. Typical electric drive systems are becoming more compact, efficient, cheaper, and adaptable as power electronics, microprocessors, and digital electronics progress.**

The "ARDUINO" is used to create SPWM signals as a control unit. Arduino software is used to create a code for the SPWM signal. The output of an ARDUINO is fed to H-Bridge through gate drive, The H-Bridge provide SPWM pulses of high voltages when these signal pass through a low-pass filter we get an output waveform which is nearly a sin wave, similarly we will generate an another sin wave which is 90 degree out of phase compare to previously generated waveform. These two sine waves are fed to main winding and auxiliary windings of single phase induction motor respectively [1].

Keywords— H-Bridge, ARDUINO, SPWM.

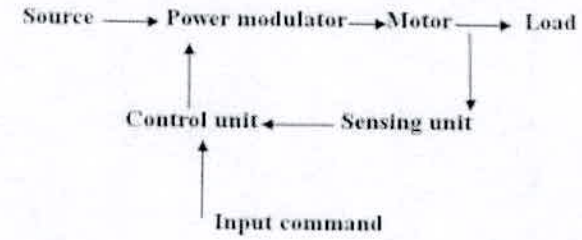
I. INTRODUCTION

We have a propensity to believe that the rotational speed of these machines is totally controlled by the source voltage and frequency of the source current, regardless of whether the word electric motor or generator is used. The rotational speed of an electrical machine, on the other hand, may be decisively controlled by realising the concept of drive. The main attraction of this concept is that it efficiently streamlines movement control with the help of drive. Electrical drives, in a nutshell, are systems that control the movement of electrical machinery.

An electric motor (or several) and a complicated control framework that controls the pivot of the motor shaft make up a standard driving system. With the use of programming, this control is currently achievable. As a result, the controlling becomes more precise, and the drive concept also provides usability. This drive system is commonly used in a wide range of industrial and household applications, including processing facilities, transportation systems, material manufacturers, fans, pumps, engines, and robotics, among others. Diesel or gasoline engines, gas or steam turbines, pressure driven motors, and electric motors all use drives as prime movers.

The following is a simplified block diagram of an electric drive. The load in the diagram depicts a variety of electric-motor-driven equipment, such as fans, pumps, and washing machines.

Forced-commutated electronic switches such as IGBTs, MOSFETs, and GTOs are used in the variable-speed control of AC electrical equipment. Asynchronous machines powered by voltage supplied converters (VSC) fed by pulse width modulation (PWM) are gradually displacing DC motors and thyristor bridges. It can provide the same flexibility in speed and torque control as DC machines by combining PWM with modern control approaches such as field-oriented control or direct torque control.



Block diagram of an electrical drive

fig. 1: **Electrical Drive**

II. BLOCK DIAGRAM

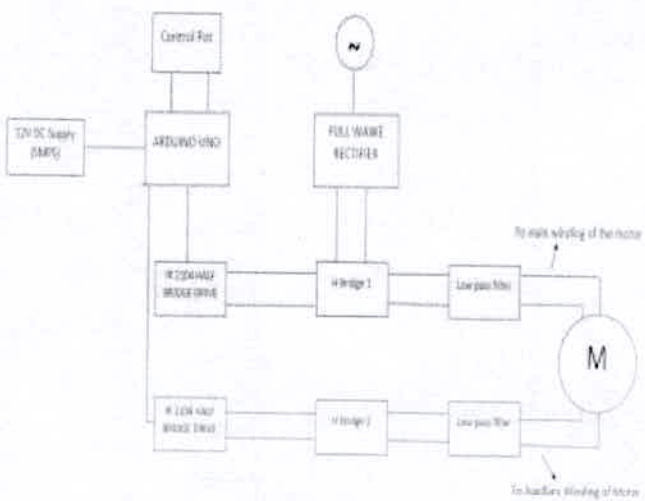


Fig. 2 **Block Diagram**

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SELF TARGETING AUTONOMOUS TURRET SYSTEM (S.T.A.T.S)

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Abstract - **Nowadays, many expenses are made in the field of defense in adopting primitive security measures to protect the border from the trespassers and also protect lives of military personnel's in warzone areas. Some military organizations take the help of robot in the risk prone areas which are not that effective when done by army men. These Army robots are confining with the omnidirectional wheels, camera, sensors, artificial intelligence and visual recognition. Not only for military applications, but autonomous turrets can also be utilized for the home and aid in keeping intruders from important possessions and family. The main objective of our system is to get real time data processed by the camera sensor to trace the intruders. It will encompass a combination of hardware and software to match a mounted airsoft weapon's point of aim to the located target in the camera's view. Different from most turrets out there, this will all be controlled from a portable device the user can move around wirelessly. The proposed system as autonomous mode of operation, in which the system tracks and engages targets without any human intervention.**

Keywords – Wireless Secure Shell, Omnidirectional, Computer Vision, Human Intervention, Mecanum Wheel, Autonomous.

I. INTRODUCTION

The motivation of the project is to strive for an autonomous system that can mark and has the ability to neutralize an intruder. The trend towards autonomous systems in the field of armed weapons has been due to the emphasis on reducing human casualties during conflicts. The self-targeting autonomous turret system (STATS), is a camera-based weapon system that uses software to locate and attack a moving target. It will encompass a combination of hardware and software to match a mounted airsoft/nerf weapon's point of aim to the located target in the camera's view. The sentry gun which will have the ability to scan its field of view and user will be able to see the field of view. This Army robot is more efficient compared to the soldiers. Excellency of this robot is in being operated wireless from re-mote which offers no risk to the soldier lives. Robots are enhanced to be robust and sturdier giving the guarantee of success in the risk prone environment. The main aim of the project is to implement a Camouflaged technology based Wireless multifunctional Robot which can be controlled through smart devices. Having locomotion and navigates around the risk prone areas and tries to identify the intruder.

II. MATERIALS & COMPONENTS USED

A. *Micro-controller*

Heart of the robot is a raspberry pi. Raspberry pi is a series of small single-board computers (SBCs) used for controlling all the operation done by the devices which are interfaced to it. Raspberry Pi is popularly used for real time Image/Video Processing, IoT based applications and Robotics applications. Raspberry Pi is slower than laptop or desktop but is still a computer which can provide all the expected features or abilities, at a low power consumption. Raspberry Pi is more than computer as it provides access to the on-chip hardware i.e. GPIOs for developing an application. It has ARM based Broadcom Processor SoC along with on-chip GPU (Graphics Processing Unit).

STM32F103RCT6 ARM microcontroller-MCU is another board used in this system both raspberry-pi and this chip works simultaneously reducing the load on both, this communicate via serial transmission. This ARM based chip controls Drivers, Sensors, Motors and other electrical and electronics components, where

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ANALYSIS AND REDUCTION OF HARMONIC DISTORTIONS USING FILTERS IN A TYPICAL POWER SYSTEM

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ABSTRACT: Non-sinusoidal loads in power plants lead to power quality complications due to harmonic distortion. Hence, a study is proposed in the present task to inspect the harmonics by taking a typical power system which has a crucial nonlinear load of eight induction furnaces and various small loads. Harmonic analysis is carried out on gathered harmonic injection data. Present and future operating requisites are considered for the study. The total voltage distortion and the specific voltage distortion are compared with IEEE STD 519–1992. Hence a study is proposed by using single tuned passive filters to improve power quality.

Index Terms— Nonlinear loads, power quality, harmonics, harmonic injection, induction furnaces, voltage distortion, Single tuned passive filters

INTRODUCTION

Widening diversion in the harmonic (voltage or current distortion) problem surges from the increasing numbers and power ratings of the severely non-linear loads in an industrial system. These nonlinear loads are some sources of harmonics. Projects predominantly use induction furnaces for the production of steel since they are more economical.

The trouble with this kind of furnace is the creation of harmonic distortion. The cause of the distortion is within the induction furnace system. An induction stove works by melting the scrap using a medium frequency magnetic field set up by a coil. This created distortion is very high and affects the voltage transferred by the distribution network. It is highly achievable that other loads supplied from the same network will be influenced. The loads drive non-sinusoidal currents from the supply and lead to voltage fluctuation.

The fluctuation of a sine wave can be portrayed by harmonic components considering a frequency that is an integral multiple of the fundamental frequency.Harmonics in power systems minimizes the equipment's age and can inhibit communication lines and sensitive equipment. Effects of presence in harmonics in the distribution systems can reinforce the risk of wiring failure, transformer Overheating, low power factor, blackout in the system and an excessive neutral return current in the neutral current conductor. Therefore, suppression of harmonics is turning out as a necessary topic among electric power engineers.

Examined Industrial System

Electric utilities in India are facing the pressure of reducing costs and improving the quality and reliability of supply. Reforming the performance of distribution systems to meet required objectives is a matter of selecting the most worthwhile technologies and operating methods.

Overview of the typical power system

In industrial system taken it consists of a grid rating 75MW. It supplies to two inter connected transformers namely ICT-1 and ICT-2 through ACSR MOOSE transmission line. ICT-1 is in service and ICT-2 is put into service when ICT-1 is under maintainence.ICT-1 and ICT-2 are three winding transformer having primary, secondary and tertiary MVA rating of 220/220/75 and voltage rating of 220/33/33 kV respectively.Plant consists of eight induction furnaces, four each on panel-1 and panel-2. Furnace 2 operates for a peak load of 15MW and 14.11 MVAR. The remaining 7 furnaces operate for a peak

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Simulation of on Board Electric Vehicle Charger Using MATLAB

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Abstract: **In this work the design of a system to create and handle Electric Vehicles (EV) charging procedures is proposed. Due to the electrical power distribution network limitation and absence of smart meter devices, Electric Vehicles charging should be performed in a balanced way, taking into account past experience, weather information based on data mining or simulation approaches. The main aim of this work is to develop a simulation model in such a way that it should solve the problems of Electric Vehicles charging stations and it should overcome a different charging conditions like over-load, over-peak voltages, over-current and certain atmospheric conditions etc.,**

Keywords: **Electric Vehicles (EV), over-load, over-peak voltages, over-current and certain atmospheric conditions.**

I.INTRODUCTION

Electric charging station is an infrastructure that supplies electric energy for the recharging of electric vehicles, such as plug-in electric vehicles, including electric cars, plug-in hybrids, etc. and charging stations are inevitable part of electric vehicle ecosystem. In case of India, with road network of 54,72,144 kilometers, the country needs nation-wide network of charging stations for electric vehicles as government is planning to sell only EVs by 2030. EVs integration on current electrical distribution network, without violating the system's technical restrictions, requires electrical data consumption analysis and smart charging approaches. In this complex scenario, information knowledge related with charging periods, prices, decision of charging or discharging EV batteries, needs the assistance from data mining processes. Several issues have to be considered and analyzed before taking action.

Depending on the amount of electric vehicles in the system and the charging patterns, electric vehicles integration creates new quantities in the overall load profile that may increase the load peaks. The electric vehicle charging patterns are stochastic since they are affected by the travel behavior of the driver and the charging opportunities which implies that an electric vehicle introduction also will affect load variations.

II.ON-BOARD EV CHARGING SYSTEM

An AC charger provides power to the on-board charger of the vehicle, converting AC power to DC for battery charging. The acceptance rate of the on-board charger varies by types of batteries used but is limited for reasons of cost, space and weight.

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