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COMPARISON AND PERFORMANCE ANALYSIS OF DTC - DCMLI DRIVEN PMSM DRIVE USING SPACE VECTOR MODULATION

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Abstract
The paper focus on comparison and performance analysis of DTC - DCMLI driven PMSM drive using space vector modulation is designed, and implemented for automotive application. The simulation work is done using MATLAB software. A DTC based novel SVM was proposed to control of torque, torque angle and stator flux. From the detailed comparison, direct torque control (DTC) based three-level DCMLI driven PMSM drive has stood out as a feasible solution as compared to the conventional inverter in automotive application. Hence direct torque control (DTC) based PMSM drives can validated for hardware implementation. The proposed method three–level DTC - DCMLI driven PMSM drive is found acceptable because of its less distorted output, lower costs, better control performance and other advantageous features. Hence it is used in automotive applications.

Keywords: Direct Torque Control, Diode clamped Multilevel Inverter (DCMLI), Permanent Magnet Synchronous Motor (PMSM), Space Vector Modulation (SVM), Total harmonic distortion (THD).

1. Introduction

Electric motors (EMs) and generators are the primary workhorses in hybrid electric vehicles (HEVs). The generators convert mechanical power from the engine electrical power in order to charge the batteries and operate the motors. Motors produce the required torque to drive the wheels. There are many types of motors and generators used in HEVs: induction, switched reluctance, and permanent magnet. [1-5]. Electric propulsion systems are the main part of electric vehicle (EV).It consist of electric motors, power converters and electronic controllers [6-12].DTC method is proposed to maintain constant switching frequency also reduce torque and current ripple. [13-18]. This paper focus on DTC based DCMLI Using SVM techniques on a surface mounted PMSM used in electrical vehicle. A novel technology of space vector modulation for the DTC is proposed [19-26].

The DTC simulation of PMSM is developed using MATLAB Simulink. The DTC are the efficient control methods for AC machine. DTC method is robust, simple and also has excellent dynamic performance. The limitations of the DTC are its flux ripples and relatively high torque also variable switching frequency in case of Induction motor. The performance of the DTC of PMSM can be improved by reducing the high flux and torque ripples and maintaining a fix switching frequency using novel technology of space vector modulation. [27-35].

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Simulation analysis of electric vehicle charging station using hybrid sources

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ABSTRACT

This paper described simulation analysis of electric vehicle (EV) charging station using hybrid sources. This paper highlights electric vehicle charging station with photovoltaic panels, batteries, and diesel generator. This study employs a solar, battery, diesel generator set, and grid electric vehicle charging station to provide continuous charging in is landed, grid-linked, and Diesel generator (DG) set connected modes. By utilizing a solar and battery, the charging of battery in electric vehicle application is the primary objective If the storage battery is poor and there is no solar generation, The mode of charging automatically shifted to grid or diesel generator set. Furthermore, the charging station manages the generator voltage and frequency without the need of a mechanical speed governor in conjunction with the storage battery. The demand is nonlinear at unity power factor (UPF). For continuous charging, power used from the grid or the DG set and it is synchronized to the grid/generator voltage by the point of common coupling voltage. To boost charging station operating efficiency, the charging station also performs all power transfer from car to grid, vehicle to house, and vehicle to vehicle.

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1. INTRODUCTION

With zero tailpipe emissions, electric vehicle are the most efficient modes of transportation. Given the benefits of electric vehicles (EVs), there are presently 3 million vehicles on the road, with a total of 100 million expected by 2030. However, the proposed approach needs a vast charging infrastructure as well as massive energy. Furthermore, using fossil fuels to create energy, on the other hand, does not reduce emissions; it only moves them from vehicles to power plants. As a consequence, employing nonconventional energy sources for electricity generation may completely eliminate emissions while simultaneously benefiting the environment. solar production is the most feasible option for electric vehicle charging in all sources because it is available practically anywhere, whether rural or urban [1]–[3]. It is open almost all year

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IoT-Based Induction Motor Monitoring System for Industries

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ABSTRACT

The most common kind of motor used in industrial applications is still the AC motor. In many applications, it is crucial to monitor and regulate the induction motor's settings, and there are numerous ways to guarantee dependable performance. This research focuses on the remote monitoring and management of a three-phase induction motor's numerous parameters using the Internet of Things (IoT). Short circuit motor temperature, current, and voltage are just a few of the characteristics that the sensor and sensor module keep track of and send to the processing unit, which displays the parameter on the server. To prevent system failures through the server gateway, the system also includes automatic and manual control methods to stop or start the short-circuited motor. With constant monitoring to detect failures and also to identify preventative maintenance, this system's adoption improves the machine's operational efficiency. The most prevalent type of motor in use today across all industries is the AC motor and the brilliant scientist Nikola Tesla's development of an induction motor. The induction motor is responsible for over 50% of the world's electricity consumption. 90% of industries utilize induction motors because they have the necessary properties like being naturally "self-starting" motors, and not requiring permanent magnets, brushes, commutator rings, or position sensors. Moreover, induction motors are more affordable and reliable than other types of motors, retain a strong power factor, require less maintenance, are extremely efficient, and are tiny in size.

Keywords- AC motor, Controlling switches, Electric motors, Internet of things, Parameter monitoring

INTRODUCTION

Mechanical and electromechanical systems are mostly propelled by electric motors in today's manufacturing sector. In industrial applications, DC motors were widely utilised before the development of AC short-circuit motors. Because they perform better than DC motors thanks to their invention, AC short-circuit motors are frequently utilised in industrial automation [1].

The straight rotor design of the AC motor, which results in low cost, longevity, and low maintenance, is one of its key advantages. According to research on induction motor design and operation, the primary flaws of induction motors fall into the following categories:

- **Electrical Problems:** such as those brought on by single phase, under or overvoltage, overloads, or unbalanced supply voltage or current.
- **Mechanical Defects:** Breakage of the rotor bar, mass imbalance, eccentricity of the air gap, bearing fault, failure of the rotor winding, and failure of the stator winding.
- **Environmental Defects:** Defects in this category are brought on by machine vibration, ambient temperature, and ambient humidity. The above-mentioned electrical, mechanical, and environmental factors of the motor all affect how well it performs; hence the AC shunt motor control methods are extremely dependent on these parameters. Hence, to assure continuous operation of the short-circuit motor and to prevent potential failure situations, it is important to evaluate the pre-failure condition and adjust its characteristics [2, 3].

The Internet of Things (IoT) has drawn a lot of interest and is anticipated to have a positive impact on a wide range of applications as developing technology has sped up development

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MULTILEVEL CONVERTER FOR SINGLE PHASE INDUCTION MOTOR USING IGBT

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Abstract: - This study describes a five-level inverter for three-phase induction motors that is based on a microcontroller and is field-oriented. IGBT serves as the power source. Since its introduction three decades ago, pulse width modulation (PWM) techniques have been the most widely used means of controlling the voltage and frequency supplied to electrical AC machines. A flexible and affordable solution is made possible by a scheme based on a 5-level PWM inverter that controls a high performance 8-bit standard microcontroller with a gate driver circuit and additional hardware. There is a wide range and good resolution for changing the output voltage. We'll present experimental results from an induction motor drive.

Keywords: - Microcontroller, FOC, PWM, multilevel inverter, and induction motor.

1. INTRODUCTION

Over the past ten years, numerous studies have been conducted with the aim of enhancing the efficiency of induction motors. The foundation of the different approaches is the field-oriented control of the rotor flux model reference condition system. The induction motor's unique benefits of low cost and simple construction make it a suitable choice for variable speed drives. Certain internal components of the asynchronous machine require upkeep or replacement. The asynchronous machine's electromagnetic torque expression can be practically translated into the torque of a D.C. machine through field-oriented control of the rotor flux of voltage applied to the machine.

This work sharpens the suggestions of decoupling the dependent excited D.C. motor by decoupling Vds and Vqs to control the flux, specifically in the course of the component Ids and Iqs. The couple, the junction temperature, the rotor flux, and the stator pulsation are all determined by the estimators. The expression of electromagnetic torque can be transformed by controlling an induction motor to almost equal the torque of a DC machine. An implementation of a 5-level PWM inverter-based vector-oriented control of the rotor flux of an asynchronous machine using an induction motor. Furthermore, the voltage applied to the IM requests a modulator stage with field-oriented control of rotor flux and multi-level inverter PWM. This step lengthens the time required for signal processing

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COARSE GRAINED RECONFIGURABLE ARCHITECTURE FOR MULTICORE SYSTEM DESIGN

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Abstract:
An increasingly significant area of study is reconfigurable computing. One way to significantly speed up an application is to move its computationally demanding parts onto reconfigurable hardware. As the ability to dynamically adapt a system to a range of diverse applications becomes the focus of system design, flexibility, scalability, and reconfigurability become increasingly important factors. Coarse-grained reconfigurable computing systems are much more performant than general-purpose systems, as indicated by numerous applications. In order to design the system with coarse-grained reconfigurable architecture, this study has been conducted.

Keywords: Coarse grain reconfigurable architecture, multi-core system, transistors, ASIC, Fine-grained reconfigurable architectures etc.

I. INTRODUCTION

In the past, clock rate increases and adding more transistors to chips were the only ways to improve processor performance. Nevertheless, there is a limit to this solution. Two major challenges for processor designs as transistor density rises are power dissipation and on-chip wire latency. Chip designers have to alter their processes because it results in excessive power consumption and high heat dissipation. Rather than using a single core, chips with multiple cores are the new trend. Better performance is provided by this new approach, which uses less power[1]. As single core processors quickly approach the physical boundaries of achievable complexity and speed, multi-core processing is an increasingly popular industry trend in the modern era. Power costs associated with improving single core performance could eventually outweigh the additional transistors used. Combining several cores on a die to increase processing capacity and throughput on a single chip is a logical use for the extra transistors. Increasing the number of processing units (cores) and, consequently, the possible computing capacity, is made possible by multi-core architectures [2][3].

In terms of computing technology, multicore processors are new; however, the ideas of parallel computing and multithreading are not. But these ideas have gained significance with the advent of multicore CPUs. Multi-core architectures are widely expected to surpass the conventional interpretation of Moore's Law, as more and more multi-core processor products from leading semiconductor companies are being released [4]. If two or more processors are added to a single integrated circuit to improve performance, lower power consumption, and more effectively process multiple tasks at once, the result is a multi-core system. Two or more independent cores in a single computing component constitute a multi-core system.

Multiple cores can be placed in a single die with their peripherals depending on the application thanks to the use of multi-core technology. The term "core" refers to a single processor. The integrated circuit dies consist of either a single die or multiple dies combined into a single chip package. A system with multiple cores can accomplish multiprocessing within a single physical package.

Only identical cores are present in homogeneous multi-core systems. Homogeneous multicore systems are those in which a single core design is deployed repeatedly. A homogeneous multi-core architecture has exactly the same number of processing cores: comparable frequencies, cache sizes, features, etc. The cores in heterogeneous multicore systems are not all the same. By this, it is meant

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REDUCTION OF HARMONICS IN AC DRIVES & WAVELET SYNTHESIS

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Abstract
AC drives with variable speeds are becoming more and more common in various commercial and industrial loads. This paper examines the current situation of direct converters and provides an overview of the generally used current source converter technologies, such as pulse width-modulated current-source inverters (CSIs) utilized VFD system modulation methods. The suggested workflow entails utilizing Matlab/Simulink simulation tools to simulate three-phase PWM Current Source Inverter fed Induction Motor (CSI-IM) drive systems. This piece of writing mostly offers a unified method for producing pulse width-modulated patterns for inverters and rectifiers that use three phases of current. The motor current waveform has harmonics produced by this conversion process. This study focuses on the use of filters to mitigate motor current harmonics and FFT analysis to analyze them for smooth motor performance. The filter employed in Passive filters reduce harmonics. Because of this, the filter only lowers the fifth and seventh order harmonics. The work also involves wavelet analysis and the investigation of signals in the form of motor current. The FFT Analysis and Wavelet Analysis use very distinct methodologies. Two methods are available for performing wavelet analysis: wavelet programming and graphical approach. Wavelet programming is carried out using an M-file, which contains a software built for motor vehicle analysis.

Keywords: Harmonics, Total harmonic distortion (THD), variable frequency drives (VFD), power factor, current source inverter (CSI), Fast Fourier Transform (FFT), Wavelet.

Introduction

The current source inverter fed induction motor system forms the basis of the proposed work. A current source rectifier is connected at the front end, which rectifies the 6.6 Kv ac voltage to create DC. The inverter again transforms the dc voltage into ac and then gives the induction motor with power. Given that GTOs and SCRs are the switches utilized in the rectifier and inverter.This needs a pulse to be triggered. The discrete six-pulse generator, which is coupled to the gates of the rectifier and inverter and has six switching devices in each section, provides the triggering pulse. The system produces harmonics as a result of the switching procedures. Because of the switching period, the inverter's ac output is not sinusoidal the primary source of harmonics, which is taken by the switches and is in quazi square form. Six switches are utilized, so the 5th and 7th harmonics are harmful to the system. Therefore, lowering this harmonic order is the primary goal. Low pass filters are employed for this purpose in order to minimize the harmonics. By choosing the values of the inductor and capacitor, an LC filter is employed. Therefore, the filter used in this system is passive. The bus receives the induction motor's output bar that displays mechanical quantities, the rotor, and the stator. Since the stator side current is our primary concern, we select bus-bar amounts of the stator. An attached scope can view the waveforms. Wavelet is used to analyze the signal of the current waveform. A set of MATLAB-based utilities is called the Wavelet Toolbox. It offers tools for statistical applications utilizing wavelets and wavelet synthesis, as well as tools for the analysis and synthesis of signals and images. packets inside the MATLAB framework. There are two types of tools available in the toolbox:

Methodology

In a system where the loads fluctuate over time, adding a variable frequency drive (VFD) to a motor-driven system may result in energy savings. A motor linked to a VFD can have its operating speed

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BALANCED VOLTAGE SAG CORRECTION WITH THE HELP OF ENERGY STORAGE SYSTEM

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Abstract
Voltage sag is one of the major power quality problem which results in a failure or a mis-operation of end use equipments. Sensitive industrial loads and Utility distribution networks all suffer from various types of outages and service interruptions which can cost significant financial loss per incident. The aim therefore, is to recommend measures that can improve voltage sag. In this paper a method of determining the exact amount of voltage injection required to systematically correct voltage sag with active power injection with the help of energy storage system (ESS) is described. This paper presents the Dynamic Voltage Restorer (DVR) with ESS based PI Controller method to compensate balanced voltage sag. Simulation results show that this proposed method can compensate balanced voltage sag effectively.

Keywords: Power quality, voltage sag, Custom power Devices, DVR, Energy Storage System, pulse width modulation.

Introduction

Voltage sag is a momentary decrease in the *rms* voltage magnitude lasting between half a cycle and several seconds [1]. Two important parameters of voltage sag are magnitude and time duration. However, the sag magnitude is not constant, due to the induction motor load [2]. Fig. 1 shows 50% voltage sag for 300ms. Voltage sag due to faults have become one of the most important power quality problems facing industrial customers. Any disturbances to voltage waveform can result in problems related with the operation of electrical and electronic devices. Users need constant sine wave shape, constant frequency and symmetrical voltage with a constant rms value to continue the production. This increasing interest to improve overall efficiency and eliminate variations in the industry have resulted more complex instruments that are sensitive to voltage disturbances [3]. Static Series Synchronous Compensator (SSSC), commercially known as Dynamic Voltage Restorer (DVR) injects a voltage in series with the system voltage provides the most cost effective solution to mitigate voltage sags by improving power quality level that is required by customer [4]. When a fault happens in a distribution network, sudden voltage sag will appear on adjacent loads. DVR installed on a sensitive load, restores the line voltage to its nominal value in few milliseconds.

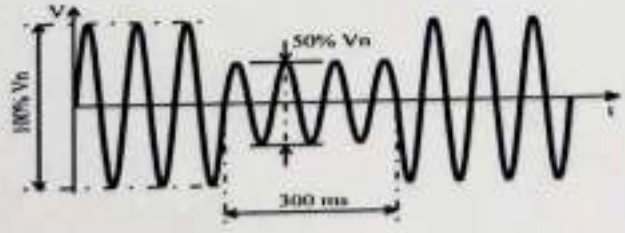

Fig. 1 Voltage Sag

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THE OVERCURRENT GRADING MECHANISM FOR FUSE, RELAY AND CIRCUIT BREAKERS FOR A TYPICAL POWER SYSTEM

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Abstract

The Power system consists of Generators, Transformers, Transmission lines, feeders and different kind of loads which play an important role somehow in the system. When a fault takes place in any part of the system that part is eliminated from the system for the proper and continuous operation without affecting the other part of system. This is done either by the Relays or by the Circuit breakers. The most important aspect of these protective devices is their time of operation. They must operate at proper time when fault occurs and must have co-ordination with other protective devices. So to co-ordinate different relays for clearing the fault "Over Current" grading is important. This paper goes through the Overcurrent Grading which is important aspect to get a better advantage in grading procedure.

Keywords: Fuse, Circuit Breakers, Relays, Overcurrent Grading

1. Introduction

The objective of this paper is to perform the Overcurrent grading of the system for a simple single line diagram. It consists of Generators, Feeders, Transformer, Motor and relays at various points. The grading is started from the load side i.e. because the minimum operating time will be at that part also as per the given information Relay B has the minimum operating time. The operating time of the relay at the load side has the minimum time and this time goes on increasing as we move towards the generator side. In case when the primary protection fails the backup protection comes into action.

Suppose the relay B in the given system fails to operate for fault then the short circuit current can affect the other part of the system. So in that case relay D acts as a backup protection. The system also has a differential protection scheme. The differential protection works only for the protected part it is covering. If any fault appears outside this differential protection the relays used for this protection will not operate.

There are some relays which are very sensitive and they cannot make correct difference between normal condition and fault condition. So for that reason differential protection is used. [2] Relay F is used for the differential protection as shown in the system diagram. Suppose I_1 and I_2 are the two currents entering and leaving respectively through the line. When fault occurs within the protected zone I_2 will reverse and restrain will be $(I_1 - I_2)/2$ and operating current is I_1+I_2. [1]

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MONITORING AND CONTROLLING ROBOTIC ARM USING IOT - A REVIEW PAPER

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Abstract
The "Robot Operation Sequencer Application" represents a pioneering project at the forefront of robotics and automation. In today's dynamic industrial landscape, robotic arms play a pivotal role in various sectors, from manufacturing to healthcare. However, the intricacies of programming and coordinating these robotic arms have often posed challenges. This project introduces an innovative software application specifically designed for robotic arms. The primary goal is to create a user-friendly interface that simplifies the programming and control of robotic arms, enabling users to define, manage, and optimize operation sequences effortlessly. Advanced control algorithms ensure real-time monitoring and coordination, enhancing precision and adaptability in diverse applications. The expected outcomes include a powerful tool that revolutionizes the way robotic arms are operated. Industries such as manufacturing, logistics, healthcare, and agriculture will benefit from increased efficiency, reduced complexity, and improved automation. As robotics technology continues to advance, the Robot Operation Sequencer Application for Robotic Arm emerges as a catalyst for transformative change, promising a future where robotic arms are more accessible, versatile, and indispensable in various domains.
Keywords: -Arduino Uno, Servo Motor, Bluetooth Module, ASP.NET, etc.

I. Introduction

In an era characterized by rapid technological advancements, the integration of robotics and automation has ushered in transformative changes across numerous industries. Among the most versatile and impactful robotic tools are robotic arms, prized for their precision, adaptability, and versatility. These mechanical marvels have found applications in manufacturing, logistics, healthcare, agriculture, research, and beyond. However, despite their widespread utility, robotic arms present a considerable challenge – the complexity associated with their programming and operation[1].

Robotic arms, with their intricate mechanical structures and intricate coordination requirements, demand advanced programming knowledge. Traditional methods often involve complex coding, making them accessible primarily to experts in the field of robotics. This complexity has, in turn, limited the widespread adoption of these powerful machines, preventing them from realizing their full potential.

Recognizing this significant hurdle, the "Robot Operation Sequencer Application for Robotic Arm" project emerges as an ambitious engineering endeavor. This project is driven by the vision of simplifying and democratizing the programming and operation of robotic arms through innovative engineering solutions. It aims to provide a solution that empowers a broader spectrum of users, even those without specialized robotics expertise, to harness the capabilities of robotic arms effectively[1].

The Robotic Operation Sequencer (ROS) application marks a pivotal advancement in the landscape of robotic arm control, introducing a sophisticated platform that redefines the way robotic operations are programmed and executed. As industries worldwide continue to embrace automation for enhanced precision and efficiency, the demand for intelligent and adaptable robotic systems has grown exponentially. ROS emerges as a ground breaking solution that caters to this demand by offering a universal and user-friendly interface for orchestrating intricate sequences of operations with robotic arms.

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The Computation of Surge Over-Voltages on a Typical Power Transmission System Using PSCAD/EMTDC Software

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ABSTRACT

The power system is divided into many different parts. Protecting these various parts from various faults becomes essential for an uninterrupted power supply. Thus it is important to protect the system from overvoltages also which may be due to switching operation or due to lightning operation. In this research paper use of the software is done which is called PSCAD/EMTDC. The PSCAD/EMTDC software is a kind of simulation software that does all the practical things related to the power system on the computer. The software is very powerful and easy to use. The purpose of this paper is concerned with the overvoltages caused due to switching and lightning. The PSCAD/EMTDC software helps to understand the effect of overvoltages on the system. This paper also shows the effect on the voltage and current across the protecting device when a surge arrestor is connected and when it is disconnected. The analysis is undertaken by considering a simple single-line diagram which has an overhead transmission line, gas insulated substation and transformer. For doing so the surge impedances of mentioned apparatus have been considered. The paper also describes the necessity of using a surge arrestor and the appropriate location where the surge arrestor should be placed for its effective usage.

Keywords- Electromagnetic Transients including DC (EMTDC), Lightning, Overvoltages, Power Systems Computer Aided Design (PSCAD), Switching

INTRODUCTION

The power system is the most important thing which is used to supply energy. The energy when created, cannot be stored or destroyed but it can be transformed from one part to another [1]. The power system is divided into three parts starting Generation, Transmission and Distribution. At a certain level, the electricity is produced at the generating stations using synchronous generators which are then stepped up by using a step-up transformer. At a very high voltage, this energy is transmitted for distribution purposes where again with the help of a step-down transformer it is distributed in the local areas [1].

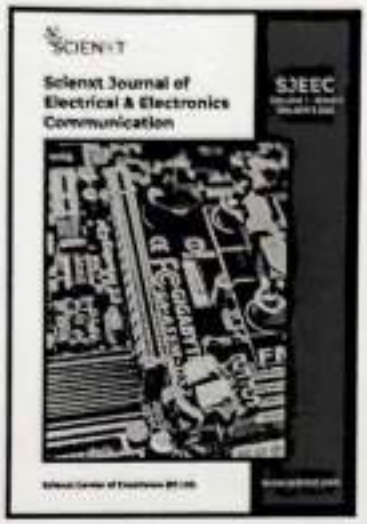
With the increase in demand, the power plant capacity is also increasing, and the transmission lines for transmitting energy are also increasing concerning their length. In a situation where a continuous supply of energy is required the protection of the power system is very important. At the movement, UHV [2] lines are being constructed to minimize the cost and increase reliability.

But there are certain types of overvoltages from which these lines should be protected for the proper operation of the system. The overvoltages are divided into two types [1];

External Over Voltages: This kind of over-voltage arises mainly from the lightning phenomenon. When lightning strikes the line at any point the surge is produced which does not have any direction [1] i.e. it travels in any direction and has no relation with the rated voltage limit of the line.

Lightning strokes, electromagnetically induced overvoltages, electrostatically induced overvoltages [2] etc. are some reasons which can be included in this group.

Internal Over Voltages: These types of voltages are due to the changes made in the operating condition [1] of the network, such as by simple operation of a circuit breaker a sudden rise in voltage can take place which may further affect the system operation. The Internal Overvoltages are divided into two parts [2]; due to switching operation and temporary overvoltages.



IOT Based Smart Solar Cooling System

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Abstract:

The comfort and relax is the basic need needed eventually during the summer seasons and has amended an important need of hour with the use of such air conditioning and cooling system which is increasing rapidly. The power outages and high initial cost has made it unsuitable of the village areas. Photovoltaic systems are seen as a way for renewable energy in the future, as the solar air conditioning system provides many essential products to the village. The technology improves indoor air quality by monitoring product performance, improving ventilation and controlling humidity. Despite the growing number of design and management guidelines for energy use, the high demand for electricity continues to rise and there is currently no solar air conditioning system for residential use at home, especially in cities, businesses and schools. The solar air conditioner with freezer for food at home has been tested as part of the business, making it ideal for home use. The proposed work addresses this issue and is a design project aimed at maintaining a comfortable temperature inside a car parked in a parking lot or driveway. The proposed work addresses this issue and is a design project aimed at maintaining a comfortable temperature inside a car parked in a parking lot or driveway.

Keywords:

Internet of Things, IoT service, smart home, Home automation system, home appliances, Internet, Microcontroller, NodeMCU.

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Implementation of Solar Powered Autonomous Fire Fighting Robot

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ABSTRACT

The creation of a remote-controlled fire robot is the primary objective of this project. The water tank and wireless pump on this robot both spray water. A PIC microcontroller performs the functionality offered. The transmitter button sends instructions to the receiver, telling it to move the robot in front, back, left, and right. To run the DC motor through the motor controller IC for the necessary duty, the decoder decodes the data before sending it to another microcontroller. The remote control has a decent range of up to 100 metres with the right antenna. The water tank and water pump linked to the robot body are operated by the microcontroller's output in conjunction with the appropriate signal from the transmitter. An Arduino Uno series microprocessor controls the entire operation.

Keywords- Arduino uno, Automatic fire detection, BT module, Buzzer, Controller, LCD

INTRODUCTION

This technology monitors your surroundings via a wireless connection. The main goal of this project is to create a remote-controlled firefighter robot. Both this robot's water tank and wireless pump spray water. An Arduino microcontroller is required to perform the required actions. A button on the transmitter sends a signal to the receiver to move the robot in one of her four directions:

Forward, backward, right or left. The purpose of this project is to build a Bluetooth-enabled remote-controlled firefighting robot. The robotic vehicle package also includes a water tank and a wirelessly controlled water injection pump. This task requires an Arduino Uno series microcontroller. To instruct the robot to move forward, backwards, left or right, use the buttons on the transmitter to send commands to the receiver [1-6].

Attached to the other end of the microcontroller are his three motors, two of which are used to propel the vehicle and one to operate the robotic arm. The receiver decodes the signal and passes it to another microcontroller to control the DC motor with a motor driver IC. The radio transmitter works as a Bluetooth remote control with the advantage of good range (up to 20 meters with the right antenna). The water tank and water pump installed in the robot body are operated by the output of the microcomputer and the right signal from the transmitter. An Arduino uno series microcontroller manages the whole process. The controller drives the motor through a motor driver IC with a microcontroller attached.

STATEMENT OF THE PROJECT

- The goal of the project is to construct a remote-control Bluetooth-equipped firefighting robot.
- The autonomous vehicle's arrangement also includes a water tanker and a water-throwing pump that can be wirelessly operated.
- To control the movement of the receiver, commands are delivered from the transmitting end through a BT module.
- The robot uses a pump motor coupled to a water tank mounted on its body to extinguish fires when it encounters them.
- The remote control is made possible via radio frequency technology.

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Seed Sowing Robot for Farm Powered by Solar

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Keywords: automation, agricuture, arduino, robot, bluetooth.

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ABSTRACT

Agriculture is the primary source of income as well as the backbone of Indian economy. Nearly, half of the total population of our country has chosen agriculture as their main occupation. It all started due to the impact of, "Green Revolution" due to which farmers came to know about the various methods involved in farming and the respective advantages in it. For instance, included the use of tractors for ploughing the field, invention of tube- wells, production of pesticides, etc. Since water plays significant role in this scenario, techniques were discovered which would help in watering the field efficiently, consume less water and reduce human work load. This project consists of designing of the robotic machine which can be used specifically for sowing smaller, lightweight & dry seeds. The success of crop production depends on timely seeding of these crops according to the seasons with reduced dull work of farm labor. Seed planting using improve sowing equipment is a key to achieve precise seed distribution within the row.

1 Introduction

India's progress record in agriculture over the past forty years has been quite impressive. The Indian agriculture sector has been successful in keeping pace with rising demand for food. The contribution of increased land area under agricultural production has reduced over time and increases in production in the past two decades have been almost entirely due to increased productivity. Contribution of agricultural growth to overall progress has become widespread. Increased productivity has helped to feed the people, enhanced farm income and provided opportunities for both direct and indirect employment. The success of India's agriculture is subjected to a series of steps. The major sources of agricultural growth during this period were the spread of modern crop varieties, intensification of input use and investments leading to the expansion in the irrigated area. In areas where 'Green Revolution' technologies had major impact, growth has now stabilized. New technologies are needed to push out yield frontiers, utilize inputs more effectively and diversify to more sustainable and higher value cropping patterns". At the same time there is urgency to better exploit actual potential of rain fed and other less endowed areas. Given the wide range of agro-ecological setting and producers, Indian agriculture sector has faced with a great diversity of needs, opportunities and prospects. Future growth needs to be faster, more

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SUPER CAPACITOR TO OPTIMIZE THE PERFORMANCE OF PV SYSTEM

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ABSTRACT

The purpose of this paper is to outline the development of an internal real-time electrical phenomenon monitoring system. The system is designed to monitor key parameters such as voltage, current, solar radiation, and temperature in a photovoltaic (PV) system. The implementation of this system involves developing an electrical phenomenon system, building the necessary electronic equipment for accurate readings, and creating an analysis information work that displays the monitored information through an easy-to-use charting interface. The proposed model has the potential to be adapted for use in different types of PV systems, ensuring proper functioning and reliable data monitoring. With this real-time monitoring system, it is possible to detect and address issues in a PV system before they become major problems, thereby optimizing its performance and extending its lifespan. Additionally, the ability to collect and analyse data in real-time provides valuable insights that can be used to improve the overall efficiency and effectiveness of the PV system.

Keywords: Super Capacitor, Solar panel, PIC Microcontroller, Relay.

1. INTRODUCTION

Photovoltaic (PV) systems have become increasingly popular as a renewable energy source due to their ability to convert solar energy into electrical energy. However, one of the challenges of using PV systems is the intermittent nature of solar energy, which can result in power fluctuations and other issues that affect their performance. To optimize the performance of a PV system, various technologies and techniques can be employed, including the use of super capacitors. Super capacitors, also known as ultracapacitors or electrochemical capacitors, are energy storage devices that can charge and discharge quickly and have a longer lifespan than traditional batteries. By incorporating super capacitors into a PV system, the system's performance can be optimized for both high power and energy density. Super capacitors can provide short-term power bursts during periods of high demand, reducing the load on batteries and extending their lifespan. They can also be used to provide power during periods of low demand, when the solar panels are generating excess energy. The integration of super capacitors into a PV system requires careful consideration of the specific requirements of the system, including the power and energy demands, the capacity of the batteries, and the available space and resources. However, when properly implemented, the use of super capacitors can significantly improve the performance and efficiency of PV systems, making them a more viable option for renewable energy generation. This paper will explore the potential benefits of using super capacitors in PV systems and discuss the considerations and challenges involved in their integration. The use of super capacitors in PV systems is not a new concept, and there have been several studies and experiments conducted to evaluate their effectiveness. One study found that incorporating super capacitors into a PV system increased its efficiency by up to 15%, compared to a system that used only batteries for energy storage. Another study found that super capacitors could provide the necessary power for a PV system during periods of cloud cover, reducing the need for backup power sources. One of the main advantages of super capacitors is their ability to handle high current and voltage levels, making them well-suited for use in high-power applications like PV systems. Additionally, their long lifespan and low maintenance requirements make them an attractive option for energy storage in remote or off-grid locations. However, there are also some limitations to the use of super capacitors in PV systems. For example, they have a lower energy density compared to batteries, which means they can store less energy per unit of volume. This makes them better suited for short-term energy storage and applications where quick charge/discharge cycles are required. Additionally, they can be more expensive than traditional batteries, although their longer lifespan can offset some of the costs. The use of super capacitors in PV systems is not a new concept, and there have been several studies and experiments conducted to evaluate their effectiveness. One study found that incorporating super capacitors into a PV system increased its efficiency by up to 15%, compared to a system that used only batteries for energy storage. Another study found that super capacitors could provide the necessary power for a PV system during periods of cloud cover, reducing the need for backup power sources. One of the main advantages of super capacitors is their ability to handle high current and

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Evaluation and Improvement of Line Utilization using FACTS Devices

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ABSTRACT

Flexible AC Transmission Systems, also popularly known as FACTS devices, are static power-electronic instruments used in AC transmission networks to escalate power transfer capability, make systems more stable, and increase the controllability of the networks through series shunt compensation. In recent times, the popularity of FACTS devices and their usage have increased, mainly in developed countries. This increase in the use of FACTS devices has been very beneficial for the overall performance of the system. This paper contains the basic concept and knowledge of FACTS devices, which are used in the power system. The paper gives information about the different FACTS devices that can be used in the generation, transmission, and distribution systems in order to perform certain tasks and the various types of devices under them. The paper also includes the simulation of a given system in MATLAB software in order to compensate for or decrease the current limit by using the FACTS device at a certain point on a transmission line. The paper also gives us an idea of how the different types of FACTS devices can be used and their current use in the industrial area or in the power system, i.e., their impact on the modern industrial and power sectors.

Keywords- AC transmission, FACTS, Generation, MATLAB, Transmission and distribution

INTRODUCTION

The demand for electricity or the power in last few decades is seen to be increasing day by day. So with such an increase in the demand level the generation of electricity is also increased in the last few decades. Such an increase in demand is not going to stop at a certain point it will always increase. It becomes essential to deal with such increasing demand and involve new technology to fulfil it. Also, it becomes very necessary to keep the balance between the demand and supply. To handle such a big demand the systems are interconnected so the load can be shared with interconnected power systems thus reducing the overloading on the single system. The main attraction of this kind of technology is that the FACTS technology takes much less time than installing the new transmission line. The main reason behind interconnection is to pool the power plants so that the generating cost of individual systems can be minimised and thus reducing the use of coal in the power plants i.e. the cost of generation and improving its reliability [1]. The balance between the demand and supply must be maintained properly at each time; if not for example, if the demand is more than the generation then there may be the chances of load shedding. Thus to avoid such difficulties it is preferable to connect the power system so that the power can be shared. But with an increase in the power systems connected the power transfer also increases and the power system becomes complicated and resulting in the system being less secure [1]. So in such type of conditions, the FACTS devices play an important role in maintaining or running the system properly without any difficulties.

With interconnections between the two countries, the transmission system goes on changing according to the load i.e. with an increase in the load it increases so for such type of condition the FACTS device is used to make operation easy without any interruption and fault and any power oscillations [2].

FACTS are the technology that is developed from power electronics and now it is used in various places. This new technology is

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Hybrid Renewable Energy Generator with IOT Monitoring

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ABSTRACT

Solar power plants need to be monitored for efficient power output. This aids in when restoring optimum energy output from power generation while being on the lookout for concerns such as defective solar panels, damaged connections, and dust accumulation on panels that reduce performance. Here, we propose an automated Internet of Things-based system for monitoring solar and wind power that provides automatic power monitoring from anywhere over the Internet. This system automatically detects the solar panel's output and sends information via the internet to an IOT system. Here, we used an IOT platform to send energy-generating parameters to an IOT platform server via the Internet. IoT-based controllers are the key components of the framework. This will promote preventative assistance, identification of the cause, and a true inspection of the plant that can sustain ongoing assessment.

Nowadays, the frameworks for sustainable energy sources are emerging as the best way to produce power. As technology advances, the cost of sustainable energy source equipment is decreasing overall, enabling large-scale solar-powered photovoltaic setups. We developed a model for the use of a practical IoT strategy to screen a sun-oriented evaluation of the performance of a solar and wind power system with open-source resources and tools like Arduino and Ubidots. A SaaS (Software as a Service) platform called Ubidots gives a web-based area for tracking the generating parameters. Ubidots offers all services at lower charges, saving you money on website planning and maintenance. We concentrated on creating a system that required the least amount of effort and had an easy-to-use interface so that regular people could install rooftop solar-powered plants and screens without relying on organisations that provide administrative support.

Keywords- Automated IoT, Sensor, Solar and wind power monitoring, Software as a service, Ubidots

INTRODUCTION

The primary issue we face daily is the energy crisis. Even though the energy sector has made significant progress, possibly there is still a lot more to be done to increase the effectiveness of its use. Every electronic system needs a power supply; hence the design of these systems plays a crucial role in every application. Energy is a fundamental prerequisite for development, and the demand for it is increasing as a result of the rapid rise in the global population, technological advancements, and other economic and political conditions. Electricity is produced using traditional energy sources like coal, diesel, and nuclear power, all of which are rapidly running out. Therefore, it is crucial to use non-conventional energy sources. Solar and wind energy can be viable alternatives because they are always available. The need for improved utilization of such systems has emerged with the increase in demand for renewable energy sources. Two energy systems are combined to form a hybrid energy system. Here, wind and solar energy are used as two sources. We attempted to use the Internet of Things to monitor a power-generating system. The IoT assists in system monitoring by

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A SMART AIR POLLUTION MONITORING SYSTEM

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ABSTRACT

The level of pollution has increased with times by lot of factors like the increase in Population , increased vehicle use, industrialization and urbanization which results In harmful effects on human wellbeing by directly affecting health of population exposed to it. In order to monitor quality of air based system is purposed. Air quality plays veryimportant role in safety , security, and health of the mankind .while increasing Large – scale industrialization and urbanization creates huge cities , these activities have Have been creating various ill – effect to the environment . Likewise, one problem is Deterioration of air qualityin various Indian cities.the primary contributor to air Pollution is the particulate matter (PM2.5), causing human health issues, like asthma and Other respiratory illnesses . A studyhas found out that the persons inhaling particulate matter In air are at more risk of lung cancer and comparable to non -smoker susceptible to secondhand Smoke . The parameters of the environment to be monitored are chosen as temperature, humidity, Volume of CO, volume of CO2, detection of leakage of any gas – smoke , alcoholol , LPG.

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Electricity Generation by Wind Using Resonance and Piezoelectric Effect

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ABSTRACT

Faraday's law of Electromagnetic Induction is the working principle behind A.C.-D.C. generators, which contributes a major part of the generated electricity utilized today. However, the Photoelectric Effect used in Solar cells is also a useful source of renewable energy produced from the Sun. In this research work, we have tried to generate electricity from the concept of Resonance and Piezoelectric Effect. To achieve the goal, we have used a thin strip of stretch-resistant material which naturally has the property of resisting the applied stretching force. The length of this stretch-resistant material will be set up so that the incoming airflow will make the thin strip vibrate at its resonant frequency. This will create high-amplitude mechanical vibrations on the thin strip. Now, these vibrations will be passed to the piezoelectric material. Piezoelectric materials have the property to exhibit the piezoelectric effect, which will convert the high amplitude mechanical vibrations passed by thin strips to the piezoelectric material into electrical discharge and hence, we generated electricity from wind using Piezoelectric Effect & Resonance. Due to less moving parts in our setup, it is theoretically more efficient in high wind conditions where a windmill usually fails to work. The only moving part is the thin strip which moves in a flapping motion hence, the generator is named a flapping generator. Even though the generated electricity is in a lesser amount, we can create an array of some such setups to increase the output electricity (as we do in solar energy generation) as per our requirement.

Keywords- Electricity generator, Flapping motion, Piezoelectric effect, Resonance, Renewable energy, Wind energy

INTRODUCTION

Electrical energy is the basic requirement of any electrical equipment to work. Nowadays, we are getting heavily relied upon by electrical equipment for various purposes like telecommunication, medication, entertainment, security systems, etc. Due to this, electrical energy has become an important requirement and efficient electricity generation processes are much focused on by countries across the globe.

In electricity generation, a generator is a device that converts motive power (mechanical energy) or fuel-based power (chemical energy) into electric power for use in an external electrical circuit. Sources of mechanical energy include gas turbines, water turbines, steam turbines, internal combustion engines, wind turbines and even hand cranks. The first electromagnetic generator, the Faraday disk, was invented in 1831 by the British scientist Michael Faraday. Generators provide nearly all of the power in electric power grids. In addition to electromechanical designs, photovoltaic and fuel cell-powered generators utilize solar and hydrogen-based fuels, respectively to generate electrical output.

In our work, we are going to generate electricity by using the Kinetic Energy of Wind followed by the concept of the piezoelectric effect. Since this process can't be done directly so requires following certain steps to achieve the goal.

LITERATURE REVIEW

Most of the generators used today work on the concept of Faraday's Law of Electro-Magnetic Induction which states that "Whenever a conductor is placed in a changing magnetic field, an electromotive force is induced along that conductor". Even though Faraday's Law of Electro-Magnetic Induction is widely applied on

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INDUCTION MOTOR FAULT DIAGNOSIS USING CEPSTRUM ANALYSIS AND NEURAL NETWORK TECHNIQUE

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Abstract
Due to their numerous moving parts, induction motors can develop catastrophic defects that shut down production, injure people, and waste raw materials. Therefore, in order to prevent any kind of system failure, it is crucial to stop the defective conditions at their beginning. This paper addresses the induction motor's rotor bar fault. About 10% of all induction motor failures have the potential to be rotor bar faults, which are brought on by the rotor winding. An induction motor's condition monitoring and fault diagnosis are crucial on the production line. By enabling the early diagnosis of faults, it can lower the risk of unexpected failures and the cost of maintenance. This work presents experimental findings for malfunctioning. This paper reports on experimental findings for the use of an artificial neural network-based technique and cepstrum analysis for the detection of broken rotor bar faults in induction motors. It has been discovered that an effective method for diagnosing induction motor faults is the combination of cepstrum and neural network analysis. For the rotor bar defect, a feedforward neural network was employed, with fault features retrieved through the use of cepstrum analysis.
Keywords: Artificial neural network, rotor bar fault, induction motor, and cepstrum analysis

1. INTRODUCTION

Induction Motors are easy to install, control, simple, robust, dependable, affordable, and suitable for a wide range of industrial applications. The primary causes of rotor problems, mostly broken rotor bars, are pulsating loads and direct on-line starting. It causes arcing, vibration, overheating, torque pulsation, and damage to laminations. It also causes inconsistent speed. Faults are caused by electrical and mechanical strains; overloads and sudden changes in load result in mechanical stress, which causes rotor bar and bearing failures. Thermal stresses, residual stresses, dynamic stressors, environmental stresses, and magnetic stresses are the other reasons. The rotor bar fault severity and sideband amplitude have been found to be directly proportional, despite the sideband amplitudes being sensitive to motor loads. Because the rotor currents are so low in these circumstances, the broken sidebands of the motor bar remain undetected even at light loads or in the absence of any loads at all. Even if we assume a full load condition, there is still a chance that an entirely or partially broken rotor bar, which can cause anything from a minor to a catastrophic failure, will go unnoticed.
A robust condition monitoring method must be developed in order to address these problems. Machine fault diagnosis is the main problem with machine condition monitoring. A diagnosis is an assessment of the motor's current "health" or operational state. In addition to lowering the possibility of unplanned machine breakdowns, a trustworthy diagnosis method also contributes to the machine's lifespan extension. This has led to the industry's current trend toward condition-based preventive maintenance. The potential for false indications resulting from errors and uncertainties in fault classification drives researchers to develop a more robust and trustworthy A robust condition monitoring method must be developed in order to address these problems. Machine fault diagnosis is the main problem with machine condition monitoring. A diagnosis is an assessment of the motor's current "health" or operational state. In addition to lowering the possibility of unplanned machine breakdowns, a trustworthy diagnosis method also contributes to the machine's lifespan extension.

Comprehensive Analysis on Electric Vehicle Technology

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Abstract. The greenhouse gases (GHGs) released by ICE- powered transportation have become a significant source of environmental, economic, and social concern in the twenty first century. Also, the fossil fuel remains are depleting day by day and prices of gasoline which is needed to power the ICE engine are drastically rising to the sky limit. In the world of transportation systems, a new "sustainability" mantra is taking centre stage. The main strategy we can use to make sure the automotive sector is "sustainable" over the next fifty years is electrification of transportation. Electric vehicles (EVs), such as pure electric vehicles (PEV), hybrid electric vehicles (HEV), and fuel-cell electric vehicles (FEV), are becoming an appealing choice for road transportation due to rising concerns about energy diversification, energy efficiency, and environmental protection. This paper reviews the state of art of battery charging methods ie onboard and offboard charging associated at various power levels, various drives used in recent EV's and their controls and comparison, and also gives the overview of isolated non isolated converter topologies and comparison on control strategies and lastly comparison on various battery parameters considering different batteries used in EV's.

INTRODUCTION

Tracing back the history to eighteenth century, Thomas Davenport, was the first who developed an electric vehicle model which used to move on a path which was circular. In laterdecades, with the creation of the Edison Cell, a nickel-iron battery that enabled the first mass-produced electric cars, were introduced to the public. Compared to the batteries cells used in early EVs, the Edison Cell had more storage space and were also rechargeable. By the 1900s, EVs had a sizable market share[1].

Although electric automobiles were quite popular, they werealso very expensive and had a very short driving range. As an alternative, cheaper, and more potent form of transportation, gasoline and diesel-powered engines began to appear afterWorld War One.

It wasn't until 1990's, that the concept of highly efficient,clean, smart, and interconnected transportation networks remained largely unexplored. Governments were prompted toact during that decade due to social, geopolitical, andenvironmental issues. Transportation that was fueled bycombustion now causes an endless stream of issues. It wassoiled. It was insecure. Additionally, it was predicted to resultin exorbitant rises in health care expenditures as a result ofurban smog and environmental damage. Recurring oil crises had resulted in significant price shocks for governments. Rapidly increasing GHG levels in the atmosphere combined with forecasting tools that showed the catastrophic effects of a changing climate (such as unpredictable weather patterns, ruined food crops, and rising ocean levels) propelled governments in particular to create more rigorous and stringentactions against ICE-powered transportation which has created fertile ground for renewed interest and investment in electric drive vehicles and electrification of transportation.

The creation of more effective electric machinery, such as high-power electronic controls and permanent magnet AC traction motors, has advanced significantly. These technologiesshow that it is possible to develop and

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Fingerprint and GSM Based Door Lock System

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ABSTRACT

In this study, we used GSM and fingerprint technology to investigate the door locking and unlocking system. To keep your information, money, space and personal property from intruders. This paper provides fingerprint and GSM base door lock systems for SMS-based door lock control. ARDUINO microcontroller, GSM module, fingerprint module, keypad, display LCD, servo motor and buzzer are the components of this security system. The entire driver unit is under the control of an Arduino microcontroller. It serves as a means of communication. The GSM method for mobile alarm messages in case of failed password attempts. The password required for authentication is entered using a keypad module. If the password is entered incorrectly, an error message appears on the screen LCD. A message is sent to the registered user via the GSM module, and if there are people or security personnel nearby, the associated buzzer sounds to alert them.

Keywords- Arduino, Buzzer and fingerprint module, Global System for Mobile Communication (GSM), Keypad, Liquid-crystal display (LCD), Wireless fingerprint

INTRODUCTION

In ultramodern casing estates, a security system with colourful detectors and an alarm system are essential. For home use and other purposes, a secure alarm system was created. A central monitoring system for nonstop display of detectors. For the necessary communication, transmitters were connected to detectors and receivers to a monitoring system. The communication for each transmitter connected to a particular detector is shown on the display with central monitoring. A home security system that uses GSM/ GPRD technology to enable door lock operation via Short Communication Service (SMS). The microcontroller that controls the entire motorist unit is called Arduino. The microcontroller is connected to a keypad, a GSM module and a buzzer. A computer or other microcontrollers can change information using an Arduino board as a tool. GSM technology to shoot an alarm communication to the mobile device after a series of unprofitable word attempts. Since door security is of utmost significance at present, we have designed and enforced a digital door cinch system that works in three different modules. The 4- number word is entered via the keypad module. The most secure mode is the GSM module, where the proprietor has to enter the word via textbook communication on his mobile device to open or close the cinch. The main advantage of a GSM module is that it allows the stoner to lock and unleash a door with a remote control. The main advanced point offered by all three modules is that if an unauthorized person enters three incorrect watchwords in a row, a warning communication is transferred to the proprietor's GSM mobile number stored in the Arduino software and a warning tone is actuated to increase security mindfulness in society.

LITERATURE SURVEY

Jayant Dabhade, Amirush Javare, Tushar Ghayal, Ankur Shelar, Ankita Gupta, [1] In this paper, a new approach to home automation is proposed using Bluetooth as the main element of the system. The system consists of various features analogous to SMS, intrusion alarm, vibration sensor and stirs sensor and an Android operation. It includes two modes of operation emergency and door ice/unlocks for guests. Thus, this system tries to make the door ice system more secure and better for use in

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Deep Convolutional Neural Network Multimodal and Transfer Learning Model For Pneumonia Detection in Medical Images

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*Abstract:*Millions of people throughout the globe suffer from pneumonia, a potentially fatal respiratory illness. Effective treatment and patient outcomes depend on a prompt and correct diagnosis of pneumonia. Diagnosing pneumonia is mostly dependent on medical imaging tests like X-rays and CT scans. To improve the diagnostic precision and productivity, this research introduces a unique multimodal and transfer learning model for deep convolutional neural network (CNN)-based pneumonia identification in medical pictures. Our proposed approach takes full use of multimodal data by integrating findings from many imaging modalities into a single framework for enhanced diagnostic accuracy. The detection accuracy is improved by combining X-ray and (Computed tomography) CT scan pictures, which provide complimentary information. In addition, we use transfer learning to take advantage of pre-trained models, enabling the network to pick up pertinent characteristics and patterns from massive datasets, which aids in the diagnosis of pneumonia in medical images.

Keywords: Pneumonia, X-ray, convolutional neural network, Medical imaging, Computed tomography

Introduction

Pneumonia, a widespread and life-threatening respiratory infection, continues to be a significant public health concern worldwide. Timely and accurate diagnosis of pneumonia is essential for initiating effective treatment and improving patient outcomes. Medical imaging, particularly X-rays and CT scans, plays a pivotal role in facilitating the diagnosis of this condition, providing critical visual information that aids healthcare professionals in making informed decisions. However, the interpretation of these medical images can be challenging, as it often relies on the expertise of radiologists and clinicians, and the process can be time-consuming[1-4].

Machine learning, especially deep learning techniques, has shown remarkable promise in automating the interpretation of medical images, thus expediting the diagnosis and enhancing its accuracy. Deep Convolutional Neural Networks (CNNs) have proven particularly

DISCOVERY

Morphological, electrical and magnetic properties of $BaAl_2Fe_{12}O_{22}$ nano sized powders using chemical co-precipitation technique

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ABSTRACT

In the present investigation, the samples with chemical composition $BaAl_2Fe_{12}O_{22}$ have been synthesized using perfect stoichiometric proportions of nitrates by chemical co-precipitation technique. The pellets of 15 mm diameter were prepared and sintered at 1100°C for 6 and 4 hrs and at 1000°C for 6 hrs separately. The characteristic studies have been done using XRD, SEM, electrical and magnetic properties. XRD studies of the samples showed hexagonal Y-type structure with unit cell dimensions 'a' and 'c' varies from a = 5Å to 6Å and c = 43Å to 47Å pertaining to space group $P6_3/mmc$ (No. 194). The variation in the values of lattice parameter has to be recorded with increase in Mn-Zn conc. The magnetic properties of prepared Y-type Ca-hexaferrite powder were investigated by VSM studies at 15,000 Gauss magnetic field. The transition temperature and activation energies have been investigated from electrical behavior of the samples.

Keywords: XRD, SEM, VSM, Electrical and Magnetic Properties, Curie temperature.

1. INTRODUCTION

Hexaferrites have been intensive studies due to a combination of good magnetic properties and low cost. This large family of oxides with hexagonal crystal structure contains ferrimagnetic compounds with easy axis of magnetization (e.g. M-type ferrites) and easy plane of magnetization (e.g. Y-type ferrites). Hence, hex ferrites have been widely adopted in two distinct fields: Permanent magnets and microwave technology components (Raj et al., 1995). On the other hand, Y-type ferrites $BaAl_2Fe_{12}O_{22}$ can undergo spin reorientation transitions (SRT) between different anisotropy configurations (easy plane ↔ easy cone ↔ easy axis) induced by change of temperature or applied magnetic field (Vishwanathan and Moorthy, 1990; Verwey and De Boer, 1936; Koops, 1951; Subramanian and Marks, 2004; Smith et al., 1968; Mukhtar et al, 2013; Cullity, 1976; Kamba et al., 2010). The transition temperature can be tuned by modifying the chemical composition (substitution of divalent and trivalent metal ions). Moreover, some potential

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MORPHOLOGICAL, ELECTRICAL AND MAGNETIC BEHAVIOR OF AL SUBSTITUTED BA-Y-TYPE HEXAFERRITES NANO POWDER AT DIFFERENT CALCINATION TEMPERATURES BY CHEMICAL CO-PRECIPITATION METHOD.

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Abstract: Barium Y-type hexaferrite $BaAl_2Fe_{12}O_{22}$ powders have been synthesized by using chemical co-precipitation method calcinated at temperatures 1000°C and 1100°C for 4 hrs and 6 hrs. The samples were characterized by XRD and SEM to analyze its morphology, its electrical behavior and VSM characterization has been done to study the magnetic properties. Experimental result shows that calcination temperatures ranging from 1000°C and 1100°C for 4 hrs and 6 hrs will not affect significantly on change in the phase formation. Slight modifications in the values of lattice parameter, electrical behavior and magnetic properties have been observed. DC conductivity and electrical permittivity has been observed decreasing trend with the decrease in temperature which shows phase reversal of hexaferrites at particular temperature of Ba-Y-type hexaferrite. Curie temperature increases with different calcination temperature for 4 hrs and 6 hrs due to strong superexchange interaction. The change in magnetic parameters results in possible use of substituted ferrite for recording media, permanent magnets etc.

Keywords: XRD, SEM, Magnetic Properties, Nano Particles, Porosity, Curie temperature.

I. INTRODUCTION

The numerous investigations on Y-type hexagonal ferrite have been studied. These hexagonal ferrites have been a topic of interest due to their high resistivity and low eddy current losses [1-2]. Due to their low eddy current losses, there does not exist other materials with such wide ranging values to electronic applications in terms of power generation, conditioning and conversion. A Y-type ferrite with chemical composition $BaAl_2Fe_{12}O_{22}$ powders have been synthesized by using chemical co-precipitation method calcinated at temperatures 1000°C and 1100°C for 4 hrs and 6 hrs. Y-type hexaferrites are widely used in high density magnetic recording media, overcoat-free, contact or semi-contact recording media and microwave tunable devices working at high frequency, above 70 GHz [3-4]. In Ba Y-type hexaferrites, the Fe^{3+} ions occupy seven non-equivalent sub-lattices within R-block and S-block, i.e. 12k (R-SS), $4f_2$ (R), 6g (S-S), $4f_2$ (SS) (octahedral coordination), 4e(SS), $4f_1$(SS) (tetrahedral coordination) and 2d(R) (bipyramidal coordination) [5]. The magnetic properties of the samples have been studied by using Vibrating Sample Magnetometer (VSM). The study of magnetic parameters such as coercivity (H_c), remanance (M_r),

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Nanocrystalline α-Fe_2O_3: A superparamagnetic material for w-LED application and waste water treatment

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ABSTRACT

Nanocrystalline α-Fe_2O_3 was synthesized by sol-gel technique and then characterized by X-ray diffraction (XRD), SEM, TEM, Fourier Transform Infrared (FTIR) spectroscopy, Vibrating Sample Magnetometry (VSM), and photoluminescence (PL) techniques. The X-ray powder diffraction analysis confirmed the formation of α-Fe_2O_3. Electron microscopy showed spherical morphologies with an average particle size of 30–40 nm. VSM study shows superparamagnetic nature of the synthesized nanoparticles. Furthermore, PL emission spectra showed an intense broad emission band centered at 570 nm with 393 nm excitation, indicating that it can be used for w-LED application. The CIE-chromaticity color coordinates of prepared material were calculated. The photocatalytic activity of the α-Fe_2O_3 nanoparticles was analyzed, which exhibited good photocatalytic activity for the removal AO7 from its aqueous solution.

Specifications Table

Subject area	*Spectroscopy, Physical Chemistry, Luminescence*
Compounds	*α-Fe_2O_3 (Iron oxide)*
Data category	*Synthesized material, XRD*
Data acquisition format	*XRD, VSM, PL*
Data type	*Experimental and analyzed*
Procedure	*The α-Fe_2O_3 nanoparticles were synthesized via sol-gel method by using citric acid. To synthesize α-Fe_2O_3 nanoparticles, iron (III) nitrate nonahydrate [$Fe(NO_3)_3{\cdot}9H_2O$], citric acid and sodium hydroxide (NaOH) all are AR grade were used. Initially, 2 gm of $Fe(NO_3)_3{\cdot}9H_2O$ was dissolved in 70 ml of double distilled water and stirred for 15 min. Thereafter 4 gm of citric acid solution was added slowly to the above solution, and the mixture was stirred for 1.5 h. To adjust the pH value, the NaOH solution was added to the above mixed solution. The mixture was stirred on magnetic stirrer until the homogeneous solution was obtained. The homogeneous solution was continued to stirred and heated simultaneously at 80 °C to get highly viscous residual. Further it was dried at 100 °C, so that a gel precursor was formed which was annealed at 400 °C for 4 h to obtain α-Fe_2O_3 nanoparticles.*
Data accessibility	*The data is with this article.*

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MODELLING OF REVERSE LOGISTIC APPROACHES: A PROPOSED FRAMEWORK

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Abstract
Reverse logistics is receiving more attention because of the growing environmental and economical concern. The complex issues depending on social, technical and legislative factors are: how to prevent the environmental deterioration caused by the generation of wastes, how to minimize the generation of wastes, and finally how to re-cover the valuable material contained by the wastes. In this paper, we have done an exhaustive literature review, highlighting the application of various modelling approaches from reverse logistics perspectives. The considered modelling approaches are Linear programming, Mixed integer linear programming, Goal programming and Genetic algorithm. The reverse logistics issues are basically categorized into five categories namely distribution, Production planning and control, Information technology, business economics and integration/co-ordination. The paper proposes a framework focusing these issues and suggests an appropriate approach to model reverse logistics.

Keywords: Reverse logistics networks, Linear programming, Mixed integer linear programming, Goal programming, Genetic Algorithm

Introduction

Reverse Logistics (RL) refers to the sequence of activities required to collect the used product from the customers for the purpose of either reuse or repair or re-manufacture or recycle or dispose of it [1]. Reverse Logistics concentrates on those streams where there is some value to be recovered and the outcome enters a (new) supply chain [2] [3]. To recover value from used products, companies need to design an optimal logistics structure and so the question arises, how to design this logistic structure. where to locate the various processes of the reverse supply chain, how to collect recoverable products from the former user; where to segregate the collected products to identify the recoverable resources from the scrap in order to separate recoverable resources from scrap; where to refurbish the collected products to make them fit for reuse; and how to distribute recovered products to future customers [4], [5]. So it requires a deep understanding of the whole context so that the solutions we get should be optimal.

1.1. Motivation

The environmental profile of most of the industries is not very positive. Energy consumption is relatively higher than the international standard, due to interruptions in production, poor quality of fuel and equipment, and relatively low rate of used products in production [6]. Pollution emissions in to air and waste water and solid waste are also higher than the international average. Rapid urbanization and economic growth increase waste and at the same time reduce the available landfill space [7]. Large volume of different types of wastes is produced daily by the industries as well as the localities. If the things discarded by the user are not managed appropriately then it leads to a number of societal problems such as increased risks of epidemics, air pollution caused by illegal burning and pollution of ground water. The need arises to design our reverse logistics networks for the appropriate management of these products [8].

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MATHEMATICAL MODELLING FOR THE COST OF QUALITY: A CASE OF STEEL PLANT ACTIVITIES

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Abstract

Quality has become the measure of overall performance and global competence, and high quality process performance is becoming of crucial importance in the manufacturing sector. All quality improvement programs aim for customer satisfaction at the optimum cost. For this, a realistic estimate of cost of quality (COQ); the overall costs of producing quality products is essential. COQ analysis enables organizations to capture and eliminate the consequences of poor quality. But many of the organizations do not use it effectively due to the lack of an efficient COQ tracking system. This paper presents a mathematical model for the estimation of COQ per unit product with a specific quality level. A case study, carried out in a steel plant in India, based on process interruptions such as breakouts in continuous casting of steels is presented. The economic importance of opportunity losses is emphasized.

Keywords: Cost of Quality (COQ), COQ models, Opportunity costs, Continuous casting of steels, Case Study

1. Introduction

Quality is one of the best sources of competitive advantage and many manufacturing companies promote quality as the central customer value [1]. The goal of continuous improvement programs is to meet customer needs at the lowest cost. To achieve this goal, the COQ; costs required to attain quality, must be identified, measured and reduced. Companies can lose money because they fail to use significant opportunities to reduce their COQ [2], [3] [4]. Generally, COQ is understood as the sum of conformance plus non-conformance costs, where cost of conformance is the price paid for prevention of poor quality such as inspection and quality appraisal, and cost of non-conformance is the cost of poor quality caused by product and service failure such as rework and returns [5], [6]. The objective of a COQ process is to capture the total value of poor quality in the organization and provide a vehicle that justifies the elimination of poor quality [7]. A realistic estimation of COQ is an essential element of any quality initiative [8]. However, only a minority of organizations follows formal COQ approaches because quality costs are hard to measure. This paper presents a mathematical model for the estimation of COQ, with a specific quality level, applied to a continuous casting steel plant. The significance of opportunity losses is emphasized.

2. COQ background

The concept of quality costs was first mentioned by Juran and denoted as the cost of poor quality [9]. According to Crosby, COQ is the price of nonconformance. COQ refers to the costs associated with providing poor quality product or service to the customers and it may range from 15%-30% of business costs [10].

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INNOVATIVE PRODUCT DEVELOPMENT PRACTICES IN SMALL AND MEDIUM SIZED ENTERPRISES: A REVIEW

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Abstract
The Small and medium enterprises of India is an important driving factor for the growth of Indian Economy. These SMEs not only provide the employment opportunities but helps in the process of industrialization in rural areas simultaneously reducing the unequal income distribution among the residents. The SMEs contribute significantly in the development of Indian economy through export production, domestic production, low investment requirements, operational flexibility, technology oriented enterprises etc. In India, after agriculture, small business is the second largest employer of human resources. SMEs constitute more than 80 percent of the total number of industrial enterprises and support industrial development, 40 per cent of industrial output, 80 per cent of employment in the industrial sector, 45 per cent of value added by the manufacturing sector and 40 per cent of total exports. In this we made to know the growth and contribution made by Small and Medium Enterprises in India and to understand the role of SMEs in providing employment opportunities in India. The innovation in New Product Development (NPD) process to achieve success in the market but majority of the research have considered innovation as an element within the NPD process.Most of the manufacturing organizations strongly believe that more emphasis on NPD is required to keep pace with rapidly growing technology and increased global competition. But our research shows that fundamental issues related to innovative NPD are not yet properly researched keeping in mind the unique needs of the developing world, more so particularly in the SMEs. Further, in order to verify whether QFD constitutes innovative product development process or not, QFD articles were benchmarked to identify the different best practices of QFD model. However, the best practices model only enhances the customer involvement into the NPD process but there exists no evidence that it can be used as innovative product development model. Hence, a survey was administered to evaluate the reliability and validity of both NPD best practices and NPD innovation constructs to propose innovative product development (IPD) practices in SMEs.
Keywords:Small and Medium Sized Enterprises (SMEs),New Product Development (NPD), innovative product development (IPD),Quality Function Deployment (QFD),Employment, Growth, Challenges of SMEs, MSME (Micro, Small and Medium Enterprises)

I. Introduction

The Small and Medium Enterprises (SME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. It contributes significantly in the economic and social development of the country by fostering entrepreneurship and generating largest employment opportunities at comparatively lower capital cost, next only to agriculture.SMEs are complementary to large industries as ancillary units and this sector contributes significantly in the inclusive industrial development of the country. The SMEs are producing a wide range of products and services to meet demands of domestic as well as global markets. On an average this sector has almost 36 million units that provide employment to about 80 million individuals. This sector through the production of 8000 products contributes 8% to GDP of the country. The schemes & various

"Review on methods for skin diseases according to climate under Machine Learning Techniques"

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ABSTRACT

This study explores the link between skin diseases and climate change in India, a region prone to endemic skin diseases. The machine learning regression models were used to predict skin disease occurrence in Hyderabad city from 2000 to 2018. The results showed that relative humidity and temperature are key factors promoting skin diseases without rain. The PDLM model was the best predictor of skin disease incidence and outcome at six-, nine-, and 12-month follow-ups. However, the SARIMA algorithm was more accurate for a short three-month period. The study suggests further research to validate and examine the models in India city to contribute to early skin disease prevention and control.

INTRODUCTION

Cancer, a global disease, is increasing in incidence due to increased exposure to UVR, with 40 million skin cancer patients testing annually, and nearly 2 crore people living in affected countries. [1] The United States, Australia, India, Central Asia, and the Pacific region have the highest incidence of skin diseases, with south India and central Asia accounting for nearly 30% of the global population. [2]–[4]. Global warming is causing an increase in skin diseases due to the sensitivity of sensitive skin and higher temperatures. [5]-[7]. Annual investigation shows skin diseases increase with high temperatures, with UV radiation in bathrooms increasing squalors cell and squalors cell carcinoma incidence by 45% and 2.4%, respectively. [8]. UV exposure increases by 1.5% for 1C rise, leading to skin cancer and six types of skin diseases. Currently, special medications and vaccines are available. Controlling this disease requires population control and drug validation using learning techniques to predict disease occurrence. [9]-[12]. Prediction models are used for skin disease outbreak control and preparedness, focusing on climatic attributes like humidity, rainfall, and temperature, as an initial warning method to prevent climate-sensitive skin cancer.[13][8], [14]–[17].Previous studies reveal strong association or Interconnection between skin diseases and climate factors like humidity, rainfall and temperature[1], [9]–[12], [18]–[22]. Nevertheless, the skin disease prediction method has diverse due totheir very complexity, research location and methodology[7].Therefore, recognition of the best fit prediction algorithms may be suitability to develop and validated for a particular geographical location.[23][24]. [5], [25] This study aims to investigate the link between air conditions and skin diseases in Hyderabad, the capital city of Telangana state, which is highly susceptible to climate change and has the highest incidence of skin diseases.

DATA COLLECTION

In this study, data of the quarterly andmonthly number of reported skin cancer cases in Hyderabad city from January month 2000 to December month 2018 was collected from the

Review on Smart Water Proof Wristband using variation vibrator alert to prevent blind and deaf person from obstacles and sending location through SMS

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ABSTRACT

This paper introduce a concept concerning handling the problems seemed through blind and deaf humans thru smart wristband. Due to the blind and deaf human beings face many challenges in particular when transferring in public places. Assistant to Blind humans a "clever wristband for steering Navigation to Blind and deaf human beings" is world widely required, numerous Researcher have already proposed this studies work to be able to offer strategy to this trouble on this paper we are going to increase A clever band For Blind and deaf person via Navigating them and by the usage of some trendy Sensor to make that band for talented by using Arduino. Clever band will assist a blind and deaf man or woman to mover on independently with help of ultrasonic sensor to detect limitations. On this paper presents numerous smart bands for blind and deaf era the use of net of things. Our venture will offer the place of the blind or deaf man or woman to their relative in a risky state of affairs. The principle motive of this research paper is to provide a simple, within your price range and effective answer for the visually impaired. The concept of the wrist band nature turned into to make it structurally equal, i.e. compact, light-weight and smooth to deal with, but offer the consumer with a constructive attitude at the risks along their on foot path.

INTRODUCTION

People with visually impaired face most of the challenges in the environment. The long Hoover Cane used by them is not an advantage while walking and traveling. Using smart shoes for visually impaired people need not to be depending on others for mobility. The systems we have designed consist of sensors and vibrators for sensing the surrounding environment giving feedback to the blind person and sending SMS on high-risk situations to the registered Mobile Number. It is used as a safety device as well as a navigation device. The electronic hardware will be fixed in wristband for users. Users will wear the wristband and travel anywhere, and the attached sensor will sense obstacles near the wristband alerts with the help of visually impaired people. Blind is a term used to describe people, who cannot use their eyes. People can receive 80% of the information from the environment through vision. For this reason, it is difficult for blind people to integrate into natural life. Therefore, they use a simple stick, a dog, or with the help of others. At least 2.2 billion people worldwide suffer from myopia. Most people with blindness and blindness are over 50, but the condition can affect anyone at any age. The incidence of visual impairment is expected to increase in the future. Therefore, people need good products so that they can travel smoothly and hassle-free. Therefore, it is necessary to produce a solution. Our products are designed to provide smart solutions to the negative challenges faced by the blind, visually impaired, and

Review Paper on Monitoring and Controlling Robotic Arm using IoT

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Abstract

The integration of the Internet of Things (IoT) with robotics has revolutionized the field of automation. This abstract introduces the concept of "Monitoring and Controlling Robotic Systems Using IoT" as a pivotal innovation in robotics technology. The synergy between IoT and robotics opens up new horizons for real-time monitoring, remote control, and automation of robotic systems.

IoT-enabled robotic systems harness a network of sensors, connectivity, and cloud computing to collect data, transmit information, and execute commands seamlessly. The ability tomonitor robotic operations in real-time and exert control remotelyhas far-reaching implications across various industries, includingmanufacturing, healthcare, agriculture, and logistics.

This abstract outlines the key components of IoT in robotics,emphasizing the role of sensors, data transmission, and user interfaces. It highlights the benefits of IoT, including improved efficiency, reduced downtime, and the capacity for remote operation, which translates into increased productivity and cost savings for businesses.

As IoT continues to evolve, it is driving the next wave of innovation in the robotics industry. This abstract concludes by recognizing the profound impact of IoT on industries that rely on robotics and underscores the transformative potential of this technology. Monitoring and controlling robotic systems using IoT represents a paradigm shift, and its continued development promises a future where robotics becomes more efficient, accessible, and integrated into our daily lives.

Keywords: *-IoRT, Raspberry Pi Robotics, Remote Control, IoT Integration*

1. Introduction

The advent of technology has ushered in a new era known as the Internet of Things (IoT), encompassing the interconnectivity of physical devices, vehicles, buildings, and various items. This network includes electronics, software, sensors, actuators, and network connectivity, enabling these objects to gather and exchange data. Additionally, it allows for remote sensing and control over existing network infrastructures, leading to enhanced performance, precision, and economic benefits. Robots have become integral in numerous industries, offering advantages such as the ability to operate in hazardous environments, reliability, high precision, and multitasking capabilities, effectively serving as human substitutes. A robot is a programmable machine designed to perform

CHALLENGES IN 5G FOR INDUSTRY ANDDIGITIZATION

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Abstract: *The primary objective of this article is to thoroughly explore and discuss the ways in which 5G cancatalyze and facilitate smart automation across diverse industries. The article will not only delve intothe evolution of mobile network generations but also underscore the pivotal significance of 5G'srevolutionary infrastructure. By dissecting its fundamental technologies, tracing its current trends andchallenges, and examining its practical applications across various manufacturing sectors, this articleaimstoshedlightontheprofoundrolethat5Gplaysinshapingthefuture.Itmarksthedawnofaneracharacterized byperpetualconnectivity,pervasivesmartautomation,andthedigitaltransformationofwork processes. The mobile phone industry is currently in the process of advancing and preparing forthe widespread implementation of fifth-generation (5G) networks. The seamless transition to 5Gnetworks is becoming increasingly feasible, heralding a significant driver of growth for variousindustries,particularlyintherealmofInternetofThings(IoT)andsmartautomationapplications.Therapid evolution of intelligent automation necessitates lightning-fast, low-latency connectivity, whichispreciselywhat5Gtechnologypromisestoprovide.Thistransformativetechnologyhasfar-reachingimplications,impactingIoT,artificialintelligence(AI),autonomousvehicles,digitalreality,blockchain, and even innovations yet to be conceived. Beyond being merely an incremental stepforward,5Grepresentsa gateway toan entirelynew realmofpossibilitiesfor techbusinesses.*

Keywords: *Wi-Fi , 5G, 5G networks, Cellular wireless networks, Mobile communications, Internet of Things (IoT), Internet of medical things (IoMT), Industrial Internet of Thing*

1. INTRODUCTION

Theintroductionoffifth-generation(5G)wirelesstechnologyrepresentsatransformativemilestonein the evolution of our digital world. Its arrival ushers in a new era of connectivity, promising toreshapeindustriesandpropelusintoafuturedefinedbyintelligentautomationanddigitaltransformation. 5G networks are not just an incremental improvement over their predecessors; theyare poised to be a true game-changer. They offer lightning-fast data speeds, minimal latency, and avast capacity for data transmission. These attributes will fundamentally alter the way we work,communicate, and live, offering us capabilities and opportunities we could only dream of before. Theimpact of 5G extends far beyond simply making our mobile browsing faster. It has the potential tounleash a wave of innovation that will touch every aspect of modern life. From enabling the Internetof Things (IoT) to supercharging artificial intelligence (AI), from making autonomous

Review on Life Of Plants

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Abstract

In response to the growing need for sustainable and precise plant care, this project introduces a Smart Plant Watering System with advanced features, specifically designed to address the issue of overwatering. Our system integrates cutting-edge sensor technologies, real-time data analysis, and automation to optimize the watering process for plants. The primary focus lies in preventing overwatering, a common problem that can lead to detrimental effects on plant health and water wastage.

The system utilizes soil moisture sensors strategically placed in the planting area, constantly monitoring the moisture levels in the soil. These sensors provide real-time data, enabling the system to adapt and deliver water only when necessary. The overwatering control feature employs a sophisticated algorithm that considers not only current soil moisture but also factors such as weather conditions, plant type, and historical watering patterns. This holistic approach ensures a tailored watering schedule for each plant, preventing excess water accumulation in the soil.

Furthermore, the Smart Plant Watering System incorporates a user-friendly interface, allowing users to monitor and control the system remotely. Through a dedicated mobile application or web portal, users can customize watering preferences, receive real-time alerts, and access historical data. The system's adaptability to various plant species and environmental conditions makes it an ideal solution for both residential and commercial applications, contributing to water conservation efforts and promoting sustainable plant care practices. Overall, this project represents a significant step towards creating intelligent and eco-conscious solutions for the modern challenges of plant cultivation.

Keywords: *- Nodemcu ESP8266, Soil moisture sensor, Blynk application, Relay Module, overwatering control.*

1. Introduction

A smart watering sprinkles system is an innovative solution that utilizes technology to automate and optimize the process of watering plant. It typically involves sensor. Data analysis and connectivity to provide plant with the right amount of water at the right time. These systems can be controlled remotely through a mobile app or computer, allowing user to monitor soil moisture levels, weather conditions and plant health. By reducing water wastage and ensuring plant receive adequate hydration. Smart watering sprinkles contribute to efficient gardening and conservation efforts plant watering sprinklers is an automated solution designed to efficiently and effectively provide water to plants, ensuring their optimal growth and health. It can vary in complexity, from simple drip irrigation systems to advanced, smart systems that can be controlled remotely. These systems typically consist of components such as hoses, pipes, valves, timers, and sensors to monitor soil moisture levels.

The primary goal of a plant watering system is to maintain consistent moisture levels, reducing the risk of overwatering or underwatering, and saving time and effort for gardeners and plant enthusiasts. Plant watering sprinklers are devices designed to evenly distribute water over a designated area. These systems are commonly used to ensure that plants receive a sufficient and uniform water supply. Plant watering sprinklers play a crucial role in maintaining lush, healthy plants. To prevent overwatering in a plant we will ensure proper drainage, we will use a soil moisture sensor to gauge hydration levels, and establish a consistent watering schedule based on plant needs. Adjust watering

Study of Smart Things Applications in Robotics, Protocols, and Standards for the Internet of Things

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Abstract - Smart Things has been around for more than a decade and stems from Mark Weiser's original dream of omnipotent information technology. Today, IoT is more of a descriptive term for the vision that everything should be connected to the Internet. IoT applications are very diverse and rich; they range from relatively simple home automation scenarios to the most complex scenarios of interconnected smart cities Human life today without their applications would become boring. Networks and data form the foundation of IoT protocols. Wireless technolngies include Bluetooth, ZigBee, and LongRange Wide Area Network (LoRa WAN). There is rapid development of new standards, technologies, and platforms for the IoT ecosystem. This article, focus on the current state of IoT, possible use cases, and challenges affecting Internet of Things adoption. Additionally, this article focuses on the state of smart objects and its applications, as well as an overview of IoT network protocols. Smart Things applications, including healthcare, home automation, disaster recovery, and industrial automation with the development of robots makes it possible for us to perform tasks without human intervention.

Index Terms - Internet of Things (IoT), smart things, IoT network Layer protocols, Robots

I. Introduction (Internet of Things)

In today's world, we can use our ecosystem of connected devices to create a user-friendly experience almost anywhere, including (but not limited to) our home, cars, home care and manufacturing facilities. However, customers' needs are always changing: As connected devices raise privacy concerns, businesses and their engineers need to innovate while building trust. Internet of things (IoT) refers to latest improvement withinside the interconnectivity of gadgets. Internet utilization has come to be the norm in greater components of our normal lives in latest years. Internet use has become the norm in many areas of our daily lives in recent years.

IoT consists of two key elements: "internet" and "things". IoT = Sensing + Communication + Computation the IoT connects regular "things" with the Internet. Computer engineers had been including sensors and processors to regular gadgets in view that the '90s. But development is gradual due to the fact the chips are becoming larger and larger. IoT is important for many applications, including healthcare, transportation, automation, agriculture, automotive and disaster. It also pledged to do more in improving smart homes, business applications and overall quality of life. Smart homes equipped with sensors that control the temperature, heating and cooling in our homes are an example of the current IoT ecosystem. Future upgrades to these systems could include making coffee, operating the TV, watching our health information and running our cars. These applications will cause additional problems and the necessity of changing the model according to the needs of various applications.[2]

Review on Auramatic- A smart street Light.

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***Abstract*— This paper examines a brilliant lighting framework that utilizes sensors to really control streetlamps, darkening and lighting up them depending on the situation. This system is built on top of the Internet of Things (IoT). It likewise monitors a lot of power and power, assisting with bringing down the quantity of mishaps that happen on the streets. It offers more noteworthy productivity and wellbeing. By illuminating the region, it likewise establishes a protected climate for walkers around evening time.**

Keywords—IoT, LDR , Video Vehicle Detection , Arduino, Raspberry Pi.

I. INTRODUCTION

A road lighting framework is the most major sort of street electrical framework. Streetlights, which exude light at the whole hours of the continually, as well as reliable power light during the later bits of the day from passing vehicles and individuals by walking, essentially channel the world's electrical store. How much energy utilized by streetlamps changes. The normal power ranges for gleaming, fluorescent, metal halide, and high strain sodium lights are 25-150 watts, 18-95 watts, and 50-400 watts, exclusively. Contingent upon whether they are lighting a local location, a town place, or a significant street, streetlamp lights arrive in different sizes and have shifting power utilizations (regularly somewhere in the range of 35 and 250 Watts). The typical wattage of a streetlamp is 80 watts, as indicated by agreement. This electrical power is overspent when there is a superior method for saving it. At the point when they are discarded today, sodium lights, otherwise called yellow lights, discharge unsafe gases into the air. LEDs are currently utilized in streetlamps in light of the fact that they keep going quite a while, utilize little power, and don't hurt the climate when they are discarded.

Shrewd road lighting, otherwise called savvy road lighting, is another IoT innovation that utilizes sensors to evaluate how much sunshine present as well as the presence of vehicles and individuals by walking constantly along the road. The information from the sensors is conveyed to the contraption's backend, which uses that information to choose if to illuminate or decrease the light. Ensuing to presenting these astute streetlights Exactly when this advancement is used in standard streetlights, it assists save with controlling, which is productive for the nation monetarily..

II. RELATED WORK

The chief patent sales for vigilant street lighting started in the last piece of the 1990s. It was guessed that the execution, which occurred in Oslo, would diminish power utilization by half, upgrade street wellbeing, and lessen costs related with maintenance[5][4] By joining cameras and sensors that empower development recognition, brilliant lights can become intelligent[5] Additional headways engage streetlights to talk with each other. The adjoining streetlamps are made aware of walker action by the sensor, which makes them light up and make a protected circle. This has additionally been achieved by the Brilliant Lighting innovation created by Anhalt College, which has been carried out in Germany's Bernburg-Strenzfeld. The Gunma College in Japan has proposed the exchanging utilizing a more Straightforward model power of the video camera present in the detector

Review Paper on IoT Based Weather Monitoring System using IoT

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Project Summary: IoT-Based Weather Monitoring System*

Objective

The primary aim of this project is to create an advanced weather monitoring system leveraging IoT technology. This system will effectively monitor and wirelessly transmit atmospheric conditions such as humidity, temperature, and solar light intensity to a ground station. Additionally, the system will display these readings in real-time on an LCD screen.

Methodology

The digital weather station comprises sensors for monitoring parameters like temperature, humidity, and light intensity. A microcontroller serves as the primary component, along with an LCD and EEPROM for display and storage functions. The system communicates with a PC, transmitting data related to humidity levels, liquid flow, and water temperature.

Review paper on IoT based Smart Agriculture Monitoring System

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Abstract *– Internet of Things (IoT) is propagating and blooming technology, in the present years. IoT is the collection of the sensor data through embedded system and this embedded system uploads the data on internet. Fuelled by machine-to-machine (M2M) communications, the Internet of Things (IoT) is all about connecting a wide range of internet-enabled devices – from cars, lighting, smart meters and more – that generate actionable data. In the print industry, proactive maintenance and support is nothing new. Crop farming in India is labour intensive and obsolete. Farming is still development on techniques which were evolved hundreds of years ago and doesn't take care of conservation of resources. My project is to give cheap, reliable, cost efficient and easy to use technology which would help in conservation of resources such as water and also in automating farms. We proposed use of temperature, moisture, humidity and pH sensor at suitable locations for monitoring of crops. The sensing system is based on a feedback control mechanism with a centralized control unit which regulates the flow of water on to the field in the real time based on the instantaneous temperature, moisture, humidity and pH values. Thus by providing right amount of water we would increase the efficiency of the farm. As per the need of crop controller take the decision to make irrigation ON or OFF using arduino NodeMCU .*

Index Terms- Internet of Things (IoT), NodeMCU, Sensors, Thingspeak

I. INTRODUCTION

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances and other objects to connect and items embedded with electronics, software, sensors, a ctuators, and connectivity which enables these exchange data. Each thing is uniquely identifiable through its embedded computing system but is able to inter-operate within the existing Internet infrastructure.

AGRICULTURE uses 85% of available freshwater resources worldwide, and this percentage will continue to be dominant in water consumption because of population growth and increased food demand. There is an urgent need to create strategies based on science and technology for sustainable use of water, including technical, agronomic, managerial, and institutional improvement. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield. Most of the papers signifies the use of wireless sensor network which collects the data from different types of sensors and then send it to main server using wireless protocol. The paper aims at making agriculture smart using automation and IoT technologies.

The highlighting features of this paper includes smart transmission of data using cloud (Thingspeak) . Secondly, it includes smart irrigation with smart control based on real time field data. Thirdly, smart warehouse management which includes temperature maintenance, humidity maintenance, soil moisture maintenance and pH maintenance.

II. PROPOSED PROJECT

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Planning, Analysis and Design for GWCET Workshop Building

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ABSTRACT

The purpose of this study is to groom the students about the technical aspects of an academic building that help them to face the practical-based industry. This study guides the student in a way to develop existing structures and also be aware of different building norms and regulations that need to be followed. Six students in a group participated in the study. Data required for the educational project purpose is collected from the institutional responsible member, further this available data is analyzed and developed by considering the future expansion of the institution. Institutional and building norms, Retrofitting and rehabilitation, Planning, Analysis & Design these five items are the parameters considered that are important for student's progress in the industry. The most emphasized aspects of the academic building that are essential to meeting students' needs include a workshop centre, sports facilities, gymnasium, common rooms, auditoriums, conference room etc. This means that since they may have an impact on students' performance, facilities managers in higher education institutions need to pay close attention to these extracurricular features of academic buildings.

Keywords- Analysis, Building design, Planning, Retrofitting, Software

INTRODUCTION

This is a live project done by the students for the institution on account of the future scope; the development of the college campus is a concern. Various aspects like rules and regulations formulated by the AICTE and concern department are taken into account. The given plan in this project is developed on an existing plan, the column location is kept as it is and then analyzed on commercial design software for feasibility. The basic aim of the project is to study different aspects of the planning and design of the project [1-3].

Aim

To study and develop a recreational facility at the GWCET campus.

Objectives

- Development Planning of the First and Second floors of the workshop building for recreational activities.
- Analysis of different structural models in commercial software.
- Design a suitable structural frame for the same building frame [4].

Model Description

In this project, we select an existing workshop building & redevelop that building into the facilities given below in Fig. 1 and Fig. 2 and Table 1.

- ***Ground Floor:*** Workshop (4 shops), Labs.
- ***First Floor:*** Auditorium, conference room, Common rooms, Toilets.
- ***Second Floor:*** Canteen, Sports Room, Gymnasium.

For the planning of these facilities, we refer to the norms from the building codes. Study of the number of students present on the campus done under a faculty member. Survey and inspection sessions will be carried out at the proposed site [5].

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Groundwater Modelling Using GIS Techniques: A Case Study Bagh River Watershed Area of Gondia District

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Abstracts: Geographical information systems (GIS) are the most important mapping and modeling tool for groundwater level resources in the present day. There was a challenge to define the groundwater level of A case study Bagh River watershed area pre-monsoon and post-monsoon analysis of Birsola Village, Gondia District, Maharashtra, India, is confronted with the issue of groundwater availability within a few years. To evaluate the suitability of groundwater levels using GIS interpolation model techniques, one must determine the groundwater level's suitability. Geospatial techniques working for Geographical information systems (GIS) are increasingly utilized in water resources management, hydrology, and groundwater level monitoring. This is the greatest benefit of utilizing GIS interpolation techniques. This method of study of groundwater level monitoring to generate data on water level potential position conditions in the area under study is crucial for successful analysis, prediction, and validation. The result is determined by analysis of physicochemical parameters with statistical significance and using the GIS technique for groundwater modeling.

Keywords: Geographical information systems (GIS),Groundwater Modelling, Bagh River watershed area, Physicochemical parameters

1. INTRODUCTION

Approximately 71% of Earth's surface is covered by water, while the seas contain roughly 96.5% of the planet's total water supply. About 97% of the water on Earth is saltwater, found in oceans, seas, and salty aquifers. 1.75 to 2% is found frozen in glaciers, ice, and snow; 0.5 to 0.75% is found as fresh groundwater and soil moisture; and less than 0.01% is found as surface water in lakes, marshes, and rivers, for a total of 2.5 to 2.75%. (Patle D. et.al.,2019). One of the most effective methods for evaluating the suitability of land based on the spatial variability of hydrogeological parameters has been identified as the Geographic Information System (GIS). By combining data on geologic structures, geomorphology, soil, lithology, drainage, land use, vegetation, etc., GIS provides many tools for extracting information about a region's potential groundwater supplements that continue to depend on surface water because traditional groundwater exploration is a time and resource-intensive process. The present work was carried out to investigate the impact of the groundwater quality water samples of watersheds area WGW-1/B, which is defined as Bagh River Watershed Birsola Village of Gondia district, Maharashtra, India using Statistical Study and Geographical Information System (Goitsemang et al. 2020).

2. OBJECTIVES OF THE STUDY

1. To identify qualitatively stressed and problematic study areas. Groundwater quality assessments specific areas of water quality problems.

2. To prepare GIS-based maps from the hydro-chemical study of groundwater Bagh River Watershed (WGW-1/B)

3. To establish the inter-relationship between physicochemical parameters with standard parameters using the statistical approach for groundwater.

4. The main objective of the current study is to make a groundwater quality assessment using GIS, based on the available physico-chemical data during pre-monsoon and post-monsoon seasons of the watershed area.

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Study and Analysis on Groundwater Modelling in Watershed Area of the Wainganga River Gondia District Using GIS Techniques

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Abstract- Currently, Geographic information systems (GIS) are the most significant mapping and modelling tool for groundwater analysis.The determination of the groundwater level of In a few years, the availability of groundwater will be a problem in Kati Village, Gondia District, Maharashtra, India, a case study Wainganga River watershed area pre-monsoon and post-monsoon analysis.The monsoon rains in Gondia District are concentrated in the four months of June to September, with 90.81% rainfall, 1.86% post-monsoon, 4.83% pre-monsoon, and 2.48% winter. The annual rainfall distribution in Gondia is very irregular. The main river is Wainganga, and the tributaries are Bagh.The water has a neutral to alkaline pH range of 6.6 to 8.92 and a high TDS range of 140 to 2184 ppm. The suitability of the groundwater level must be established before using GIS interpolation model techniques to evaluate it. Groundwater level monitoring, hydrology, and other fields increasingly make use of geospatial techniques for Geographic information systems (GIS). Using this method of groundwater level monitoring to gather information on water level potential position conditions in the study area is crucial for effective analysis, prediction, and validation. The result is reached through statistically significant analysis of physicochemical parameters and groundwater modelling using GIS. This study's objective is to use GIS techniques to analyse groundwater modelling in the Wainganga River Gondia District.The information can be used in the future for studies on area management, resource conservation, and restoration.

Keywords-Geographical Information Systems (GIS), Groundwater Modelling, Wainganga River Watershed Area, Physicochemical Parameters

1. INTRODUCTION

Water is the most important natural resource for human health, economic growth, and environment. Groundwater is a component of the water cycle that is stored below the land surface in saturated zones and moves slowly through aquifers. Aquifers can store water for hundreds or thousands of years. Geological formations, soil type, lineament density, slope, drainage density, rainfall form, morphology, land-use characteristics, and their inter- relationships all influence the existence and flow of groundwater (Chowdary et al., 2012). Approximately 71% of the Earth's surface is water-covered, and the oceans hold about 96.5% of all Earth's water. Around 97% of all water on Earth is saline water, which is found in oceans, seas, and saline groundwater. Less than 0.001% of fresh water is surface water in lakes, swamps, and rivers (Patle D. et al., 2019). The groundwater model is a scale model representative of a groundwater situation that can be used to predict the effects of hydrological changes in urban and rural areas, such as groundwater abstraction. Urban and rural water management is required due to the growing demand for water for domestic, agricultural, and industrial purposes. Surface waters precipitation, lakes, reservoirs, rivers, etc. are the source of groundwater in the hydrologic water cycle and Groundwater is the water that is stored beneath the earth's surface. The Geographic Information System (GIS) has been identified as one of the most effective methods for assessing land suitability based on the spatial variability of hydrogeological parameters. Since conventional groundwater exploration is resource- and time-intensive, GIS offers numerous tools for extracting information about a region's potential groundwater developments, which continue to rely on surface water. Goitsemang et al. (2020) investigated the effect of groundwater quality on water samples from the Wainganga River Watershed (WG-1/B), Kati Village of Gondia district, Maharashtra, India.

2. PROBLEM OF STATEMENT

In recent years, the groundwater in Wainganga River Watershed (WG-1/B) Kati Village of Gondia district, Maharashtra, India has decreased. Because of increased population and urban sprawl, the number of bore wells is increasing, which is affected by groundwater level and few bore wells dry during the pre-monsoon period in Kati Village of Gondia district, Maharashtra, India, this condition causes a continuous decreased in groundwater level.

EXPERIMENTAL STUDIES ON STRENGTH OF FERRO-CRETE BY USING STEEL MESHES IN SPECIMENS

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Abstract – *Due to the rapid urbanization and rise in the cost of construction material demand of low cost housing project are significantly increased. Just to lower down the cost of construction, it is essential to prefer locally available material at the same time it must compatible to the local condition. It helps to improve quality of the building as well as living condition. To achieve these goals Ferro-Crete as a construction material considerably attract attention of the engineers and industry toward itself. Ferro cement possess the high tensile strength with respect to weight ratio. Ferro-Crete has a higher cracking behavior comparing over reinforced cement concrete. It is used construct build structure in many shape, thin, hard and strong surface. This paper is basically focuses on experimental investigation of ferrocrete, comparing the ferrocrete with the reinforced concrete material. For the current project work lot of research paper is referred and studied some of the important highlights are mentioned here. It consists of closely spaced mesh in a multiple layers embedded in the cement. Orientation of the mesh is also changed and studied experimentally.*

Key Words: Ferro Cement1, wire mesh2, ferro-crete3, fibre reinforced concrete

1.INTRODUCTION

Ferrocement is relatively new material, it was first used in Europe in the middle of nineteenth century, generally used in dockyard for the building of sheep's. Latter on is also significantly used in construction industry just to satisfy the different architectural improvements.

Ferrocement has an advantage over other types of repairs and strengthening techniques because it is made through a non-formwork construction process.

Ferrocement which may be crafted from non – formwork creation method is a bonus over different form of upkeep and strengthening techniques. It complements the crack resistance blended with excessive toughness. This fabric affords a cost-powerful answer for rehabilitation and widespread packages with the aid of using implementing a small more weight at the structures.**1.1 What is ferrocement?**

Ferrocement, also known as ferro-cement, is a building method in which a "armature" consisting of woven expanded metal or metal fibres, thin steel rods placed tightly apart, and metal mesh is covered in reinforced mortar or plaster (lime or cement, sand, and water). Steel or iron are the most often utilised metals. Usually, a 3:1 ratio of highly rich cement to sand is used to make the cement; however, while building boats, no gravel is added, making the material non-concrete.

1.2 Project methodology 2

We are incorporating 1.5 micron pebbles into the ferroement. The steel mesh that we are utilizing can easily accommodate aggregates of this size. This kind of aggregate is added to the concrete in order to strengthen it more compressively. Since this is an experimental endeavor, the addition of this aggregate type to ferrocement is purely exploratory and is only being done to test the compressive strength.

2. Literature Review

Kute et.al (2013) investigated how wire mesh orientation affected ferrocement. The study's conclusion is that, for both horizontal and vertical orientations of hexagonal mesh, the compressive strength of ferrocement increases with an increase in the total volume fraction of reinforcement (%) and specific surface of reinforcement (mm2/mm3). Transverse orientation of reinforcement, or orientation perpendicular to the axis of loading, offers a higher compressive strength than vertical orientation, or orientation parallel to the axis of loading.

P.N. Balaguru et.al. this paper corresponds to The mortar matrix primarily used in Ferro cement consists of hydraulic cement and inert filler material. Portland cements generally used, sometimes blended with a pozzolan. The filler material is usually well graded sand capable of passing a 2.36 mm sieve. However, depending up on the characteristics of the reinforcing material (mesh opening, distribution, etc.); a mortar containing some small-size gravel may be used. The physical properties and microstructure of mortar depend on the chemical composition of the cement, the nature of the sand, the water-cement ratio, and the curing conditions of the finished product. Since the matrix represents approximately 95 percent of the Ferro cement volume, its propertieshave a great influence on the final properties of the product.

Sumesh jain et.al.(2014) The demand for affordable housing projects is on the rise, mainly because of

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Study and Analysis of GIS-based Groundwater Quality Monitoring System

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ABSTRACT–

As the foundation of social and economic infrastructure, water is indispensable for a healthy society and sustainable development. The daily demand for water is rising due to a significant increase in population density, urbanization, industrialization, and agricultural activities. As a result, both surface water and subterranean water levels continue to decline. The most popular alternative to surface water is groundwater, but its quality is deteriorating due to human activities in our nation. Therefore, groundwater quality monitoring has become essential. It is not possible to monitor the quality of ground water in every location by conducting a survey, and undertaking multiple analyses requires a considerable amount of time. Using GIS, however, analyses can be conducted by combining multiple data sets, and maps for distinct parameters by year can be generated. As a result, the GIS-based models facilitate understanding of annual distribution and provide a database for future use. Using GIS and data collected from the Madurai Public Works Department, this paper analyses the subsurface water quality in the Madurai district. In order to display relevant wells, a query-based analysis is performed. Using GIS-based maps, the outcomes of the strategic analysis are represented.

Keywords- *GIS, Groundwater quality, Query analysis, GIS-based Models, Hydrogeology.*

1. INTRODUCTION

Without water, it is impossible to sustain existence on Earth. Every living thing, including animals and plants, requires water to fulfil their daily requirements. As a result, humans must rely on subterranean water, which may or may not be potable, to fulfil their needs. It is essential to investigate the geochemistry of ground water used for human consumption. Ground water is the water that exists beneath the Earth's surface in soil pores and granite fissures. An aquifer is a unit of rock or an unconsolidated deposit that yields a usable quantity of water. The water table is the depth at which soil pore spaces or fractures and cavities in rock become completely saturated with water. Groundwater is naturally replenished from the surface and ultimately flows to the surface; natural discharge occurs frequently at springs and fissures and can create oasis or wetlands. By constructing and operating extraction wells, groundwater is frequently extracted for agricultural, municipal, and industrial use. The study of the distribution and movement of groundwater is hydrogeology, also known as hydrology of

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Zero Energy Building – A Passive Approach

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Abstract -

A 'ZERO ENERGY BUILDING (ZEB) is a building with annual net energy consumption nearly equal to zero. With recent advances in building technology ZEB has gained a worldwide attention and it is expected to be delivered and adapted in urban areas on larger scales all around the world by 2025. The reduction in green house gas emission is vital due to exponentially rising global climatic change, hence it is necessary to incorporate passive house designs and renewable energy resources constituting zero energy building. In addition to energy saving, the ZEB also gives comfortable indoor environment to the residents. The basic concept in ZEB is that the heat can be maximum or minimum inside the building envelope based on the outer climatic conditions and this can be achieved by keeping the house airtight and insulated. The basic principle in passive houses is not incorporate heating and cooling systems. ZEB principle is based on the high energy efficiency level and renewable energy systems causing the remaining energy needs of the building seem negligible. This report concentrates on ZEB definitions and various options available in ZEB envelope components such as walls, roofs, glazing, ventilation and also different types of materials that can adopted for thermal comfort and energy efficiency purposes. This review paper emphasizes better ZEB construction, maintenance and adoption in the future..

Keywords: Net Zero Energy Building, Solar energy , wind energy , Green Feature , Economic etc.

1. Introduction

A ZEB design should be a passive sustainable design and this consists of two major steps viz., to reduce building energy demand and to generate electricity at desired standards to achieve energy balance i.e., net zero energy. Thermal insulation is of top priority in maintaining energy efficient building and hence low thermal conductivity materials are developed and existing products are being improvised. ZEB have gained significant attention post 2010 and by 2020 it is expected that majority of the buildings in the major cities of the world would have adopted alternative renewable energy resources, stepping towards net zero energy. The Green building market worth is expected to be around 364.6 billion dollars by 2022 world-wide [8];

Hence it is a driving concept in both residential and non residential sector. In India, the net market status of green buildings is estimated to be between 30 – 50 billion dollars by 2022 [1].

The energy used by the building sector continues to increase, primarily because the new buildings are constructed faster than the old ones being retired. Recent years have seen a renewed interest in environmental-friendly passive building energy efficiency strategies. They are being envisioned as a viable solution to the problems of energy crisis and environmental pollution. Therefore ZEB should become a core concept that needs to be followed by all construction sectors, especially housing stock. Residential building is a simple model to create awareness among the public about new technologies and its benefits. This project provides the review on various passive energy efficient options available for different building components such as walls, roofs, glazing etc [2].

Fig.1. Zero Energy Building (ZEB)

2. Problem Identification

The acute problem of carbon dioxide emissions reduction into the atmosphere becomes more important due to the fact of the global climate change. Housing stock consumes 30 to 40% of all energy resources, according to various estimates. As the result, it is possible to get carbon dioxide atmosphere emissions reduction due to energy consumption reduction. The problem of housing stock energy efficiency improvement becomes very important. Transition to low energy consumption buildings construction becomes a trend which in the nearest future will transform to the task of Applied Research in the field of design and construction. Such exploration object is to design buildings with zero energy consumption or close, which is planned

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FAKE NEWS DETECTION USING CONVOLUTION NEURAL NETWORK ON SOCIAL PLATFORMS

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Abstract

The majority of smart phone users choose social media instead of internet when it comes to reading the news. The news published on news websites, which serve as the source of reliability. Fake news threatens logical truth because it is difficult for people to discriminate between genuine and false information, which damages journalism, democracy and the trust people have in governmental institutions. Evolving technologies have made it imperative to create approaches that can limit the dissemination of false information that could negatively impact society in any way. Online users tend to be vulnerable and will generally believe everything they encounter on social networking websites to be trustworthy. In order to maintain robust internet media and informal organisations, automating counterfeit news identification is fundamental. To take rumours seriously and present them as news is detrimental to society. Stopping rumours is urgently needed, particularly in developing countries. Instead, attention should be paid to accurate, reliable news reports. We provide a model for recognising forged news that is a computational stylistic study based on NLP, which can be used to efficiently deploy deep learning algorithms like ANN and CNN algorithm to identify fake stories in texts obtained from social platforms.

1. INTRODUCTION

The Internet has emerged as the most effective communication instrument of the twenty first century. It enables the speedy and reliable transfer of media between locations. social media platforms such as, Twitter, Instagram, Facebook and WhatsApp have become more significant as a result of the advancement of Internet capabilities. Lies spread farther and faster than truth around world in all areas of information, with more horrific and hazardous results. The need for preventative steps to handle such actions is mirrored by how quickly technology is developing. Broad communications have a significant influence on society as a whole, and as is common, certain people try to exploit this. There are many websites out there that offer false information.Under the guise of being factual news, they consciously try to spread purposeful publicity, falsehoods, and lies. The battle versus fake news has made the issues with social networks and data usage intertwined. By disseminating inappropriate data, a user wastes network-processing resources and also damages service provider's reputation. Social media fake stories can spread quickly and widely can wreak great damage on our society and nation. The main objective is to recognise erroneous information, which is a problem with text categorization. The creation of

PAPER CUTTING MACHINE

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Abstract: *In the contemporary competitive market, the demand for innovative manufacturing processes has intensified, necessitating the development of efficient methods that meet the requirements of precision and productivity. Current paper cutting machines in industrial settings involve time-consuming paper marking procedures to achieve precise dimensions. This proposed equipment offers an accurate, efficient, and cost-effective solution for mass paper cutting operations, primarily targeted at the paper manufacturing industry.*

The aim of this project is to streamline the paper cutting process, reducing human fatigue and operational time by eliminating the need for manual paper marking. The proposed design and fabrication of an Automatic Paper Cutting Machine incorporate locally available materials, including a motor, an Arduino board, plastic components, a cutting blade, and a belt system. The integration of a programmed code on the Arduino board facilitates the adjustment of cutting length, while the sliding mechanism executes the precise paper cutting process.

This paper cutting machine has undergone comprehensive testing to evaluate its performance and operational efficiency, demonstrating its potential to significantly enhance productivity and accuracy in the paper manufacturing industry and beyond. The machine's ability to cater to domestic-scale paper cutting needs marks a substantial advancement in addressing the diverse requirements for paper processing in various applications.

Keywords: Arduino board, Industrial automation, Sliding mechanism Quality control.

1. INTRODUCTION

The implementation of an Arduino-based paper cutting machine has emerged as a pivotal solution in the realm of large-scale paper processing, owing to its ability to streamline and automate cutting operations. Manual paper cutting machines often pose challenges, leading to irregular cutting angles and inconsistent paper lengths, resulting in decreased productivity and increased material wastage. The inefficiencies associated with manual cutting procedures highlight the need for a more efficient and precise alternative, which can be effectively addressed through the utilization of an automatic Arduino-based paper cutting machine.

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Title: Accident QR Pro

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Abstract- Accident QR Pro is an innovative communication platform that facilitates efficient and secure interaction between vehicle owners and the broader community. By leveraging QR decal tags as unique identity markers, the platform ensures seamless communication channels among concerned parties. Its multifaceted approach includes various functionalities like individual vehicle tagging, residents' parking tags, and comprehensive management of parking facilities, all geared towards optimizing parking operations and bolstering community safety measures.

The platform serves as a responsive solution during critical situations, effectively tackling a spectrum of issues, from wrongful parking and road obstructions to abandoned vehicles, hit-and-run incidents, and potential security threats. By enabling swift and reliable communication pathways, Accident QR Pro empowers users to quick report and respond to these scenarios, nurturing a culture of collective vigilance and community responsibility.

Accident QR Pro's strength lies in its integrated alert system, ensuring prompt notifications for vehicle owners regarding emergencies and potential risks, including unauthorized towing, security breaches, and accidents. This proactive mechanism significantly contributes to minimizing hazards and enhancing overall safety for both individual vehicle owners and the wider community. Emphasizing responsible vehicle ownership and a shared commitment to community welfare, Accident QR Pro plays a pivotal role in fostering a more secure, interconnected, and harmonious community environment. The platform's proactive communication approach, swift responsiveness, and comprehensive support infrastructure establish it as an essential and transformative tool in the sphere of modern-day vehicle management and community engagement.

Keywords: QR decal tags, Vehicle tagging, Wrong parking, hit-and-run incidents, Modern-day vehicle management and community engagement.

Introduction

In the rapidly evolving urban landscape, the need for seamless communication between vehicle owners and the broader community has become increasingly imperative. At the forefront of addressing this demand stands Accident QR Pro, an innovative communication platform that revolutionizes the dynamics of interaction and community engagement. By harnessing the capabilities of QR decal tags and an intuitive interface, Accident QR Pro redefines the landscape of communication, collaboration, and the effective management of various safety concerns for both vehicle owners and the wider community.

This transformative platform stands as a testament to the immense potential of technology in advancing efficient communication and proactive safety measures. With a core emphasis on facilitating smooth interaction and ensuring prompt responses to critical situations, Accident QR Pro not only simplifies the process of addressing safety issues but also fosters a culture of shared responsibility among community members. Through the integration of user-centric features and a resilient alert system, Accident QR Pro sets a new standard for effective community engagement, underscoring its pivotal role in nurturing a safer, more interconnected society within the context of the ever-evolving, fast-paced urban landscape.

Existing System:

The current communication system concerning vehicle-related issues presents a fragmented and disjointed approach, lacking a unified and efficient framework for facilitating interaction. At its core, there is a conspicuous absence of a centralized and user-friendly platform that could enable seamless and direct communication among vehicle owners, drivers, and the broader community. This fragmentation manifests as a significant challenge when addressing common concerns such as improper parking, road obstructions, and accidents.

Consequently, the processes involved in addressing these issues are often marked by complexity and time-consuming procedures. This results in delayed responses and an elevated potential for safety risks. This inefficiency in communication and response mechanisms not only causes inconveniences for vehicle owners and the community but also poses a considerable challenge in ensuring a swift and coordinated approach to resolving critical vehicular matters.

The absence of a unified platform hinders the establishment of clear communication channels and collaboration, creating a gap that compromises the efficiency of addressing safety concerns and maintaining community well-being. This decentralized approach underscores the pressing need for a comprehensive and proactive system that can streamline communication, enhance community safety measures, and provide a user-friendly experience for all stakeholders involved in various vehicle-related scenarios. Implementing such an integrated platform becomes essential not only for promoting effective and timely communication but also for fostering community engagement and ensuring the safety and well-being of all members of the vehicular ecosystem.

Problem Statement:

The lack of a comprehensive and easily accessible communication platform poses a critical challenge in efficiently managing and resolving various vehicle-related issues. The absence of a streamlined communication channel between community members and vehicle owners hampers the prompt and effective handling of emergencies, potentially leading to unsafe conditions and inconveniences for the community. This gap highlights the pressing need for a cohesive and proactive system capable of efficiently addressing communication challenges and enhancing community safety measures across various vehicle-related scenarios. Implementing an integrated and user-friendly platform is imperative not only for facilitating effective and timely communication but also for fostering community engagement and prioritizing the safety and well-being of all stakeholders involved within the vehicular ecosystem.

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SMART DRIVER ALERT SYSTEM FOR ROAD HYPNOSIS PREVENTION

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Abstract: *Road traffic safety can be influenced by road hypnosis. Accurate detection of the driver's road hypnosis is a very important function urgently required in the driver assistance system. Road hypnosis recurs frequently in a certain period, and it tends to occur in a typical monotonous scene such as a tunnel or a highway. The implementation of an advanced driver alert system utilizing a Tilt sensor and an LDR sensor represents a crucial step in mitigating the risks associated with road hypnosis and driver fatigue during extended journeys. This project aimed to develop a cost-effective and reliable system that could detect changes in vehicle orientation and ambient light levels, indicative of potential driver drowsiness. Through the integration of these sensors with a microcontroller, the system provided real-time data analysis, enabling the timely triggering of alerts to the driver. The alerts, both audible and visual, were designed to prompt immediate driver intervention, thereby enhancing overall road safety. The project's findings underscore the effectiveness of the proposed system in detecting early signs of drowsiness and preventing accidents caused by driver inattentiveness. Further improvements and refinements in the system's design and functionality could significantly contribute to ensuring safer driving experiences on long and monotonous journeys, thereby reducing the prevalence of accidents related to driver fatigue.*

Keywords: Road Hypnosis, Real-time Data Analysis, Ambient Light Levels, Audible Alerts, Visual Alerts, Accurate Detection.

1. INTRODUCTION

In modern-times, owing to hectic schedules it becomes very difficult to remain active all the time. Imagine a situation where a person is driving home from work, dead tired after facing all the challenges of the day. His hands are on the wheel and foot on the pedal but suddenly he starts feeling drowsy, his eyes start shutting and his vision blurs and before he knows it, he's asleep. Falling asleep on the wheel can lead to serious consequences, there may be accidents and people may even lose their lives. This situation is much more common then we notice and hence, it is very important to counter this problem. So to address this issue, we have come up with a Driver Anti-sleep Device. This system alerts the user if he/she falls asleep at the wheel thereby, avoiding accidents and saving lives. This system is useful especially for people who travel long distances and people who are driving late at night.

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SURVEY ON ADVANCE SEARCHING BY TELEPAIR WEBSITE USING DJANGO

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ABSTRACT

We are a team of skilled technicians who specialize in repairing all kinds of TVs, including LED, LCD, Plasma, and CRT. Our goal is to provide fast and reliable TV repair services to our customers, ensuring their TVs are working in the best condition possible. Our website provides a user-friendly platform where customers can easily book a repair service online. We offer on-site repairs, where our technicians come to your location and repair your TV on the spot. We also offer pickup and delivery services for customers who prefer to have their TV repaired at our repair center. Our team of technicians is highly skilled and experienced in TV repair. They have extensive knowledge of all the different TV brands and models, making them equipped to handle any type of TV repair. We use state-of-the-art equipment and tools to diagnose and repair your TV, ensuring that it is in the best possible condition. We understand that having a TV that is not working can be frustrating, which is why we strive to complete repairs as quickly as possible. Our team is available 7 days a week to provide repair services, ensuring that you are never without your TV for long. In addition to our repair services, we also offer maintenance services for TVs. Regular maintenance can help prevent issues from occurring in the first place, ensuring that your TV lasts for a long time. Our technicians can provide you with advice on how to maintain your TV and keep it in the best condition possible. Overall, our abstract TV repairing website provides a convenient platform for customers to book fast and reliable TV repair services. We are committed to providing the best possible service to our customers and ensuring that their TVs are working in the best condition possible. Contact us today to book a repair service! [1][8]

Keywords: Full Stack Development, Django, Full Stack Developer, Front-end Development, Back-end, Development, Stack, Development, Repair, E-commerce.

I. INTRODUCTION

Welcome to our TV repairing website! We are a team of dedicated professionals who are passionate about repairing TVs and ensuring that our customers have the best possible experience when it comes to TV repair services. Our website provides a platform for customers to book a repair service for their TVs. We specialize in repairing all types of TVs, including LED, LCD, Plasma, and CRT. Our services are available to both residential and commercial customers, and we offer a range of services to suit every need. Our team of technicians is highly skilled and experienced in TV repair. They have extensive knowledge of all the different TV brands and models, making them equipped to handle any type of TV repair. They are also trained to use the latest tools and equipment to diagnose and repair TVs, ensuring that they are in the best possible condition. [3][4]. At our TV repairing website, we pride ourselves on our fast and reliable service. We understand that having a TV that is not working can be frustrating, which is why we strive to complete repairs as quickly as possible. Our team is available 7 days a week to provide repair services, ensuring that you are never without your TV for long. In addition to our repair services, we also offer maintenance services for TVs. Regular maintenance can help prevent issues from occurring in the first place, ensuring that your TV lasts for a long time. Our technicians can provide you with advice on how to maintain your TV and keep it in the best condition possible. Our website provides a user-friendly platform where customers can easily book a repair service online. Simply fill out our online form, and one of our technicians will be in touch with you shortly to schedule a repair service. We also

SMART HOME AUTOMATION APPILANCE

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ABSTRACT

Smart Home Automation is a safe, networked, and intelligent home control system integrated with automation control, network communication, and Internet of things (IoT) technology. In a smart home, various appliances and devices are interconnected, allowing occupants to monitor and control them remotely. Here are some key points: A smart home utilizes Io to monitor and control appliances using a home automation system. It enables seamless communication between devices and provides convenience for users. Smart home Systems consist of hardware interfaces (such as sensors and Wi-Fi technology) and software interfaces (applications for controlling devices). Users can manage lighting, climate, entertainment systems, and more. Energy Management, Smart homes optimize energy usage by controlling appliances efficiently. Security, Sensors enhance home security by detecting intrusions or hazards. Convenience, Users can remotely control devices via smartphones, tablets, or computers. Challenges, Existing systems face limitations such as unfriendly user interfaces and high costs. However, ongoing research aims to address these challenges.

Keywords: NodeMCU , Rely , Arduino IDE

INTRODUCTION

Home automation can quickly bring the future in to our homes by incorporating security, climate, and household gadgets and transforms our regular home into a futuristic smart home. These smart home systems can be used for simple or elaborate tasks by integrating devices and gadgets inside and outside of your home.

A simple definition for home automation is the ability to do tasks *automatically and monitor or change status remotely*. Common tasks include turning off lights when no one is in the room, locking doors via smartphone, automates air condition systems that can sense and memorize temperature settings and appliances that help you reduce the time you spend in the kitchen.

This introduction will delve into the world of smart home appliances, exploring their benefits, functionality, and impact on modern living. We'll also consider the various types of smart home appliances available and how they are shaping the future of home automation.

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A STUDY ON THE FACTORS AFFECTING THE FINANCIAL SERVICES IN NAGPUR CITY

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ABSTRACT
India has for an extensive time, recognized the social and economic imperatives for broader financial inclusion and has made a massive contribution to economic development by finding innovative ways to empower the poor. Starting with the nationalization of banks, priority sector lending requirements for banks, lead bank scheme, establishment of regional rural banks (RRBs), service area approach, self-help group-bank linkage program, etc., several steps have been taken by the Reserve Bank of India (RBI) over the years to increase the access for the poor section of the society. This paper highlights on the use of accounts to avail various financial services under the financial inclusion drive by the Government of India and also examines the factors affecting the use of financial services such as deposits, withdrawals, loans, remittance and insurance by respondents from Nagpur city. The researcher had applied correlation method to understand the factors affecting the usage of these services. Among all the factors. Financial education seems to be most significant, indicating the need for promoting financial literacy among the masses, especially those who are marginalized.
KEYWORDS: Financial inclusion, financial services, RBI.

1. INTRODUCTION:

Financial Inclusion means offering banking and financial solutions and services to all individual in the society without any kind of discrimination. The primary concern is to include everyone in the society by providing them basic financial services without looking to a person's income or savings. The objective of financial inclusion is to provide the reliable financial solutions to the economically underprivileged sections of the society without any unfair practices. It anticipates to provide financial solutions without any kind of inequality. It is also committed for providing transparency during providing financial assistance and no hidden cost are involved. Financial inclusion requires participation in financial management for judiciously. The poor households do not have access to financial services nor they are aware of banks and their functions. Even if they are aware of banks, they do not have the access to get services from banks because they are unable to meet the minimum eligibility criteria laid by banks. Banks have certain requirements such as minimum income, minimum credit score, age criteria, and minimum years of work experience for availing the financial services. A bank would provide a deposit or a loan to an applicant only if they meet the specific criteria as per their norms. Many of the people may be unemployed without any previous employment record due to lack of education, lack of resources, lack of money, etc. so they are unable to meet the criteria as per the bank's requirement.

In this regard an initiative taken by The Reserve Bank of India through various programs and plans to have financial inclusion to the people. The central bank of India has framed regulations which has to be followed by the banks. The RBI is also offering qualified & financial assistance to every bank in the nation so as to attain its financial inclusion objectives. Let us have a look on some of the programs introduced by the RBI in order to achieve its goals:

- The RBI instructed every bank to have Basic Saving Bank Deposits (BDSD) accounts for the economically weaker sections of the society. These are no-frill accounts means the

DIGITAL MARKETING STRATEGIES ADOPTED BY VARIED BUSINESS TO REACH THE TARGET AUDIENCE AND SHOWCASE THEIR PRODUCT

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Abstract:
Nowadays the business marketing world is moving at the speed of light. According to marketer perception, keeping up with changes is not always easy. But to be successful in the fast- paced marketing world and preserve a feel of relevance with your audience- it's essential to live beforehand. In this paper researchers had focused on companies which had adopted cutting edge and competitive marketing strategies through various marketing platforms.
Keyword: Digital marketing/online marketing, Marketing strategies.

Introduction:

Any advertising and marketing that makes use of digital gadgets and may be utilized by advertising and marketing experts to carry promotional messaging and degree its effect via your purchaser journey. In practice, virtual advertising and marketing normally refers to advertising and marketing campaigns that seem on a computer, phone, tablet, or different device. It can take many forms, such as on-line video, show commercials, seek engine advertising and marketing, paid social commercials and social media posts. Digital advertising and marketing are regularly in comparison to "conventional advertising and marketing" including mag commercials, billboards, and direct mail. Oddly, tv is normally lumped in with conventional advertising and marketing.

Social media is one of the most effective advertising gears in your arsenal.

These days, approximately 90% of teenagers use social media to speak with brands, and if anything, that's most effective in all likelihood to increase.

Soon, social media turns into the maximum critical advertising approach for all goal markets, and whether or not you're pretty much to begin your first social media marketing campaign or you've been at it for years, there's usually extra you could learn how to enhance your approach.

Component of digital Marketing

Search Engine Marketing

A seek engine is an internet primarily based totally device that facilitates the consumer to discover the records they may be searching for.

Examples of a search engine are Google, Yahoo, Bing, Baidu, etc. Search engine advertising refers to any hobby that will increase a consumer's web sites rank in any seek engine .There are varieties of Search engine advertising seek engine optimization (SEO) and paid seek.

Social Media

Social media advertising is in this listing for a few very profitable reasons, however this isn't pretty much social media customers achieving the 3.eighty one billion mark. From being a channel that human beings use to set up personal connections, social media has developed into something grander, bigger, and higher than what it originally expected to be.

Email

There are numerous reasons why it's so tough to dislodge electronic mail as a channel that can provide medium to high ROI in your business, however the one issue you can't do away with from electronic mail is its versatility. Although electronic mail may also not be the latest era

A STUDY OF JOB SATISFACTION AND COMPENSATION MANAGEMENT AMONG THE ACADEMICIANS OF MANAGEMENT INSTITUTES OF NAGPUR CITY DURING THE PANDEMIC

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ABSTRACT:
The COVID-19 Pandemic has grandly shaken all organizations, creating a complex and grueling terrain for employers, who need to find ingenious solutions to ensure the continuity of their organizations and to help their employees to cope with this extraordinary extremity. Compensation is reparation that employees receive for their achievements and contributions at work. The rewards reflected positively on employees' job satisfaction, engagement, motivation, and performance. Today's realm of education scenario in modern era, especially in the organized private management institutes, has chartered new avenues for the academicians. The role and significance of academicians has assumed utmost importance requiring readiness to change orientation, dynamism and transformational leadership. Working conditions represent 'the core of paid work and employment relationships. They cover a broad range of motifs and issues, from working time (hours of work, rest ages, and work schedules) to remuneration, as well as the physical conditions and internal demands in the workplace. The COVID-19 crisis has drastically altered working conditions in organizations. Indeed, to ensure their working continuity, most organizations have moved to remote working, requiring their employees to work from home. In any academic association scholars and preceptors play vital part. For this, it's important that the academicians are satisfied in their job places so that they can creatively engage in delivering superior education and moral values & ethics in their students.

KEYWORDS: COVID-19 Pandemic, Management institutions, Academicians, Job satisfaction.

1. INTRODUCTION:

Job Satisfaction is the most important component which is core for any organization striving for excellence and growth in any domain. Employees need to be satisfied and being an important asset for organization's success, they need to be well embedded and nurtured in the organizational system to contribute optimally and effectively towards their organizational productivity and efficiency. Employee satisfaction means that the employee is happy with his work environment and climate; the reason can be his informal structure like colleagues and co-workers or the supervisors so as to enable him to perform well in his job also. Compensation plays an important role in determining an employee's level of job satisfaction. This may also perpetrate cognitively so as to cause emotional fulfillment that keeps him happy in his/her workplace. Reward practices linked to job gratification have been applied differently by public and private enterprises. Higher education is influential in the development of a country; it does not only function as a provider of knowledge but as a pertinent sector for the nation's growth and societal well-being. The higher education institutions play a notable role in development of skills, increased economy; therefore, high quality of staff is required. Management at modern-day academic institutions requires special endeavors to acquire and retain highly skilled employees to operate effectively in an extremely competitive environment.

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AN EVALUATION OF THE EFFECT OF ECONOMIC DEVELOPMENT ON CRYPTO CURRENCY

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Abstract

The relationship between economic development and cryptocurrency is a complex and dynamic one. On one hand, economic growth can provide a favourable environment for the adoption and growth of cryptocurrencies. Increased prosperity can lead to greater investment in technology and innovation, providing a foundation for the development of new cryptocurrencies and block chain-based applications. On the other hand, economic development can also create challenges for the growth of cryptocurrencies, such as increased regulation, competition from traditional financial institutions, and changes in consumer behaviour. In developing economies, cryptocurrencies can offer new opportunities for financial inclusion, as they can provide access to financial services for those who have been excluded from the traditional banking system. For example, cryptocurrencies can be used to make remittances more affordable and accessible, especially in countries with weak or unstable financial systems. In developed economies, the growth of cryptocurrencies is often driven by factors such as increased investment, technological innovation, and changing consumer attitudes towards traditional financial institutions. However, developed economies also have more established regulatory systems, which can present challenges for the growth of cryptocurrencies. Overall, the effect of economic development on cryptocurrency is not a straightforward one. While economic growth can create opportunities for the adoption and growth of cryptocurrencies, it can also present challenges that must be addressed. As such, a nuanced and multi-faceted approach is necessary when evaluating the relationship between economic development and cryptocurrency.

Keyword

Economic development, Cryptocurrency, etc.

1. Introduction

Across the globe, salaries, bonuses, and other forms of compensation are increasingly being paid in crypto money, a digital form of decent ralised cash. The buying and selling of cryptocurrencies is allowed in many nations, but not in India. Using cryptographic verification, all transactions are recorded in an immutable digital ledger using block chain technology.

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IOT BASED WIRELESS NOTICE BOARD

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ABSTRACT

The rapid growth of data usage and the increasing demand for high-speed communication services have made the telecommunications industry one of the most important sectors in today's digital world. The advent of artificial intelligence (AI) has provided new opportunities for the telecommunications industry to improve its services and enhance its customer experience. This paper presents an overview of the role of AI in telecommunications, including its current applications, challenges, and future prospects. A literature survey is conducted to highlight the latest developments in this area. Finally, some recommendations are provided for future research. This server is directly connected with relay hardware circuits to control the class webcam for monitoring the class environment. In absences of classteacher the technique very useful. A message is sent to teacher and show the notice board and all of you see in the absence of teacher easily

Keywords: high speed communication, artificial intelligence, hardware webcam for monitoring

I. INTRODUCTION

As technology improves, efficient, financially affordable and highly productive output becomes an absolute necessity, and this leads us to be more inclined towards using automated control systems. Human intervention, although it offers variety, adaptability and interactivity, could lead to errors, as it is a natural and inevitable result of this variability. Hence, automation of a system is an accepted means to minimize human error and its impact. Applying this to the situation under scrutiny now, the traditional methods of writing typing the notice on paper, and having a man/woman deliver the notice to the respective groups, or having him/her paste the notice on the notice board, is prone to errors. The person delivering could deliver it to the wrong group, or tamper with the information being sent, etc. With the electronics industry moving at a fast pace, we are able to solve many such problems with digital replacements. Our project, Multi Electronic Notice Board, aims at eliminating the use of paper in offices, schools & colleges, and other institutions; also minimizing the risk of errors, by replacing paper with LCD displays. In this project, a hardware capable of displaying notices electronically using an android application has been built. In order International Conference on Disruptive Technology for Achieving Sustainable Development Goals to display notices, a user can use the android application to type a notice and click on the send button to get it displayed. The functionality can be used only if Wi-Fi module is connected to hot spot of the host. The hardware consists of an ARM based microcontroller LPC2148 that communicates to the application through a Wi-Fi module to receive messages. LPC2148 itself retrieves message and sends signal to switch on/off a device or display a notice.

II. METHODOLOGY

The project is built around the AT89S52 micro controller from Atmel. This micro controller provides all the functionality of the display and wireless control. It also takes care of creating different display effects for given text. Display is obtained on 20X4 LCD on a printed circuit board. A GSM/CDMA Mobile Can is used to enter the required text or notice. The scrolling speed of the text also can be changed according to user requirement. After entering the text, the SMS is sent to the no which is connected to the LCD display. At any time, the user can add or remove or alter the text according to his requirement. At the receiving end the GSM modem which is connected to the Max 232 receives the message and is connected to the microcontroller AT89S52. The message which is already stored in the EEPROM is displayed on the LCD Display. This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

Guesture Control Bluetooth System Using Ardiuno Uno

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Abstract — The objective of the project was to create a gesture-controlled bluetooth speaker that responds to user inputs to control music playback on a bluetooth device. Supported playback commands include pausing and resuming of music, changing of volume, skipping forward a song, and returning to the previous song. The speaker uses an LED strip which outputs different patterns, colors and intensities of light to display the type of gesture that the speaker recognizes. The music industry has been completely transformed by Bluetooth technology. For music enthusiasts, Bluetooth has made life simple with speakers and headphones. Their compact size portability and long battery life have made them a center of attraction. Well, we hereby take Bluetooth speakers to the next level by integrating touchless operation. The Bluetooth speaker allows users to change music by just swiping their hands over the Bluetooth speaker. Also, the speaker allows users to adjust the volume by just raising and lowering their hand over the speaker. The user can thus operate the complete speaker operation without even having to touch his/her phone or the speaker.

Keywords: Guesture Control Bluetooth System, Ardiuno Uno

I. Introduction

Today, nearly everyone has bluetooth-enabled devices that carry their music wherever they go. While many people often bring a set of headphones to listen to their music, it's always nice to share it with more people via a nice bluetooth speaker. For many college students, a portable, stylish bluetooth speaker is an essential item in the dorm. The Bluetooth speakers are most popularly used nowadays. It's portability with compact size and life of battery. This can be modernized Bluetooth speakers by integrating contact less operation using arduino. It allows user to change the music by swiping the user hand over the Bluetooth speaker. It also allows the user to adjust the volume by raising and lowering their hand over the speaker. This device as a prototype module use 6 watt speaker with sub-woofer along with arduino, battery charging board, lidar sensor, audio amplifier IC, Bluetooth module and battery set. The system uses Bluetooth module to allow phones to connect to the speaker for audio input. The speaker also allows for an AUX connection for audio input and a separate charging input connector for battery charging. The lidar sensor is mounted on the front of Bluetooth speaker. The input from sensor is processed by Arduino and passes to the controller to increase or decrease volume, changes song or turn on the speaker. The battery power is controlled by the charger of battery and protection circuitry.

II. Literature Survey

A. Home Automation:

Gesture-based home automation can we achieved by using cameras in existing devices, adding ultra-Sonics sensors or electrodes, but these methods have 2019, I limitation of distance, and complicated image processing but can overcome by using wearable tech like a glove or wrist bands. Abhijit M., Anjana Nair, Jikhil John, Shahashasheer, Munna Basil Mathai has developed [1]GESTO a hand glove equipped with accelerometer and gyroscope sensor is used for gesture controlled system. In this system there is a transmitting section and receiving section. [4] The transmitting section of accelerometer and gyroscope which senses the title of the hand, sense the acceleration of movement by the hand, this gesture are converted into data with help of micro-controller which is then transmitted over RF transmitter to the receiving section received by the RF receiver. RF decoder decodes the data through the micro-controller which transfers to relay whose output have respective devices connected like TV, DVD player, computer, etc. which are controlled through the gesture. This system provides easy operation and help the disabled and aged people. This system can be improved by adding an IR transmitter for the purpose of controlling [7] IR application through gestures. Implicating IR sensor with this glove technology will add more to its application and impact factor. [B] Gaming: This sector is gaining greater attention and gesture controlled gaming is the new trend in this industry. Microsoft and Sony have implemented gesture gaming in their platform PS4 and Xbox 360.The Xbox 360 has a kinetic sensor which consist of depth, color sensing cameras and IR sensor which altogether forms the kinetic sensor which can be used for gaming. Whereas PS4 not only use 3D depth sensing cameras but also accelerometer and gyro –scope Sticks for more playing options and gesture. Image processing is complicated and adds more cost to the system, if accelerometer and gyroscope sensor programed effectively the 3D sensor camera can be avoided but may lead to certain limitation. Dr. Parameshachari B D, Rubeena Muheeb, Nagashree R N, ,Deekshith B N, Keerthikumar M, Rashmi P, Rachana R illustrated the use of Microsoft kinetic sensor [2], Microsoft kinetic sensor can be used for developing our own set of instructions for games through its SDK environment tool. This tool tracks 20 points in our body each point combination resulting into an index value that scan be programed for game controls. [3] A.D whitehead.