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3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

AY	2022-23	2021-22	2020-21	2019-20	2018-19
No of papers	124	22	96	127	60

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Design and Analysis of Venturi Turbine to Recover Waste Air Energy in Industrial Applications

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ABSTRACT

This study focused onexperimentation and simulations in the development of waste air recovery system in industrial applications. The energy recovered from exhaust and ventilation systems of the industrial and commercial applications by the efficient and effective design. Recovery of energy wasted and released in terms of air discharge to the atmosphere after primary application is experimented, tested, and proven in this report at most optimal way. Conventional power generation from wind turbine takes up large swept area and it requires higher wind speeds to deliver rated power output. Our objective was to use compact design, consistent output from the energy freely released in the atmosphere after primary use in industries and commercial sector.Waste air recovery from industrial applications and design of turbine discussed in this paper is done in such a way that exhaust air coming out of duct at the discharge is directed through a funnel arrangement maintaining all the pressure criteria. Further the turbine is installed where the velocity of air is increased with venturi effect and directed towards the low-level turbine with the help of a nozzle, it has produced power, even at a lower air velocity or wind speed from the exhaust and ventilation system at a consistent load.Computational analysis is carried out on the theoretical results achieved in earlier stage, wherein measurements recorded are used to compute the right sizing and tap higher potential area keeping in mind the various factors required to install and run wind turbine generator.

Keywords: Wind Power, Sustainable energy, CFD, Venturi, Nozzle, Turbine, Duct, Velocity.

I. INTRODUCTION

Energy is most important element for progress of humanity, in terms of socio-economic development. Energy is vital part for the survival needs in the primary and secondary form. The demand for energy, mostly in the form of electricity has increased since its invention with continuous increase in population and industrial activities around the world.

Wind turbines are installed mostly in open atmosphere to trap the air stream which contains kinetic energy. Kinetic energy available in open atmosphere is utilized by turbine blades swept area to generate power. This paper emphasis on recovery of waste air from industrial applications through amplification of velocity in venturi. Reference to the Bernoulli and Venturi principles, the wind velocity will increase with respect to the difference in cross sections [4].

The increased use of fossil energy results an environmental destruction as well as global warming. To address this bigger challenge, the use of renewable forms of energy is promoted to be a substitute [2]. Good amount of research to enhance the wind turbine performance had been done with respect to technology like installing diffuser to regulate the flow rate passes through the rotor increases power generated by the turbine [3].Other investigation done by Ohya and Karasudani on diffuser [10], they executed wind lens technology analysis on wind turbines. Wind lens technology works on shroud at the inlet, diffuser and then the brim. The results of this testing were encouraging and had indicated higher power when compared to a regular wind turbine.

In an industrial and commercial set-up everywhere ventilation system is an essential part of the establishments. Industries use ventilation systems for cooling, exhausts, and circulation of air. Air after the primary purpose is released in the atmosphere. The project is defined based on the law of conservation of energy, also known as the first law of Thermodynamics, stated that the energy can neither be created nor destroyed but it can only be converted from one form of energy to another form of energy.

This law of Thermodynamics and law of conservation of energy are being applied here for developing the sustainable initiative which can contribute towards climate change and sustainable development of energy generation techniques. The ventilated or circulated air from the system when released to atmosphere is having energy which is otherwise untapped and wasted. Velocity of air released from such systems having lower density and lower wind speeds at consistent rates.

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DESIGN & ANALYSIS OF ROTATING TABLE FOR TESTING ENGINE AT CRITICAL GRADIENTS.

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ABSTRACT: *This project presents the design and methodology to build a tilt table arrangement that can simulate different angles and forces to evaluate the transmission and IGB of an engine. The project will not involve the actual repair or modification of the engine, but to help to provide insights and suggestions for improvements. The concept of tilt table arrangement establish a standardized testing procedure to ensure consistency and reliability in testing. Tilt table arrangement to test automatic transmission. The automatic transmission unit is mounted over the tilt frame and then tested foe various gradient and slide slopes, the design is such the two platforms are assembled in such a way that both shows the rotational movement in perpendicular axis ie. One platform having tilting action on X-axis and other platform have tilting action on Y-axis & these platform are at stacked together such a way that their tilting movements combination will make the test cases/ conditions to evaluate the transmission and IGB. The critical potential weaknesses in the transmission and IGB of an engine through the testing process becomes possible. This helps to provide the recommendations for improvements and modifications to address the identified weakness in transmission and IGB's working. Our objective was to use reliable & safe design, consistent output which will help to test all types of transmission and IGB. The theoretical design calculations with consideration of required Factor of Safety (FOS) are discussed with Finite Element Analysis (FEA) of the design components, the additional safety is ensured by using the hydraulic damper system & mechanical lock systems which completes the tilt table design.*

KEYWORDS *- Tilt table arrangement, gradient, reliability, FOS, hydraulic dampers, FEA etc*

I. INTRODUCTION

There are different testing apparatuses for internal combustion engines (ie. IGB & Transmission), turntable system is one of those testing apparatus. Turntables are not typically used for IGBT and transmission testing. The turntable system can be employed in specific situations like gear engagement, quality testing, durability etc. Specific testing methods focus on thermal and electrical performance evaluations for transmissions & IGB[1].

In the in-line system, each internal combustion engine delivered by a main conveyor is transferred onto a carriage which, in turn, transfers the internal combustion engine to one of separate testing units disposed alongside a circuit as the carriage travels along the circuit. The testing units are installed in separate testing chambers each defined by an enclosure or partition walls, and they individually carry out performance tests with respect to internal combustion engines which have been individually transferred to them from the carriage. As each internal combustion engine has undergone the required performance test, it is fetched onto the carriage which, in turn, is caused to travel along the circuit before the internal combustion engine is delivered onto the main conveyor[2].

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Failure analysis of Centrifugal Pump to Increase the Hydraulic Performance by varying number of blades and blade outlet angle

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Abstract:

Applications for centrifugal pumps can be found in many commercial and industrial applications. To satisfy design objectives and validate with a CFD model, the goal of this work is to explore and reconstruct the centrifugal pump performance characteristics analytically. To choose the best suitable model with the best features among those configured with various numbers of blades and blade outlet angles, more research is conducted. To meet the required pump head design criterion, the impeller of a pump with 5 numbers of blades and a blade outlet angle of 26° is redesigned. The revised model is numerically studied by changing the number of blades to 6, 7, and 8, where blade number 6 is chosen based on needed head and best efficiency criteria. This analysis is then continued by changing the blade outlet angles to 29 °, 32 °, and 35 °. It is found that as number of blades increases head increases at loss of efficiency. Also blade outlet angle has considerable effect on head as well as efficiency of pump. So for particular application pump with 6 numbers of blades having 32 ° outlet angles is selected.

Keywords: Centrifugal pump, hydraulic performance, impeller, computational fluid dynamics (CFD)

1.0 Introduction

Centrifugal pumps have been deployed in both commercial and residential applications, including steam power plants, water treatment facilities, sewage treatment plants, irrigation systems, oil refineries, and ships using hydraulic propulsion systems. The fluid is sucked into the pump at the inlet due to the rotation of the impeller, and it is continuously lifted into the pump from the source as it passes past the impeller, absorbing pressure and kinetic energy from the vanes. This work addresses application of centrifugal pump which is used to lift a coolant circulated through cooling jacket of special purpose machine. Due to modifications in cooling system to meet

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TECHNICAL ARTICLE—PEER REVIEWED

Studies on Fretting Wear Damage Assessment of Piecewise Linear Systems Having Predefined Gap

Gajendra Vasantrao Patil · Rasika Gajendra Patil · Hemant Maruti Patil · Rahul Shankarrao Warghane

Submitted: 27 September 2022 / in revised form: 15 November 2022 / Accepted: 22 November 2022

Abstract There are many engineering systems where a predefined gap is provided by design. This gap produces a nonlinear boundary condition. This paper is an endeavor to tackle the issue of engineering structures with nonlinear boundary conditions which may lead to premature failure. The effect of stiffness ratio on beam-support interaction parameters, which characterize the response of the system, has been studied. 'Impact force' and 'Contact ratio' are studied which are significant inputs to compute work rate for a prediction of the fretting wear limited life of engineering structures like heat exchangers with baffle supports.

Keywords Gap · Nonlinear · Mode superposition · Direct integration · Piecewise linear · Mode shapes · Dynamic problems · Contact ratio · Impact force

Introduction

Engineering structures often have nonlinear characteristics. There are systems where a clearance gap is provided in design. A very common example is heat exchanger tubes with clearance at supports. This clearance produces a nonlinear boundary condition. This nonlinear system could be modeled as a piecewise linear system [1–3]. In such systems, the nonlinear function is approximated by a series of linear functions, where these linearized functions are continuous. The present researchers have performed dynamic analysis of such a system by finite element method, direct integration or mode superposition.

Figure 1 shows a typical piecewise linear dynamic system, a cantilever beam with two-sided stop, this can be modeled as a multi-degree-of-freedom finite element system.

The dynamic equilibrium equation of motion can be written as follows [10]:

$$M\ddot{U}_{t+\Delta t} + C\dot{U}_{t+\Delta t} + C_{NL}\dot{U}_{t+\Delta t} + KU_{t+\Delta t} + K_{NL}U_{t+\Delta t} = R_{t+\Delta t} \quad \text{(Eq 1)}$$

where M = Mass matrix, C = Linear damping matrix, C_{NL} = Nonlinear damping matrix, K = Linear stiffness matrix, K_{NL} = Nonlinear stiffness matrix, $R_{t+\Delta t}$ = External force vector at time $t + \Delta t$, $\ddot{U}_{t+\Delta t}$, $\dot{U}_{t+\Delta t}$, $U_{t+\Delta t}$ = acceleration, velocity and displacement vectors at time $t + \Delta t$, respectively.

Stiffness Matrix [K]

The formation stiffness matrix for a beam element has been studied by many authors [3, 4]. For the problem studied herein, no effect of transverse shear deformation need to be considered.

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Study of Air Recirculation Zones in Shared Spaces

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Abstract:
The Air borne transmission is a very big concern for highly infectious diseases like Covid-19 and other airborne diseases. A micro droplet and aerosol can be carried out in the air and can remain flowing in air over a distance in a confined space, leading to affecting high number of people getting prone to infection and it is very dangerous in enclosed spaces or shared spaces. Public places, shared facilities are the areas, where infectious aerosol can be present in the air for a long duration. Ventilation of closed spaces, shared spaces is the need of hour to have analysed and deep study in context of infectious airborne diseases. Introduction of fresh air into the enclosed environment at regular interval of times may lead to fast dilution of air present in the enclosed space. The prominent building codes and HVAC guidelines allows as to calculate ACPH (Air changes per hour) in an enclosed space as per the occupancy and flow rate. The age of air is the criteria to define the amount of air residing in the enclosed space when it enters the space till its exhaust from that space. The more the age of air in the particular area the more can be the infection probability among the occupants. It is predominant to study the airflow pattern caused due to ventilation which can be collaborated with age of air to know about the infection probability. Typically, a classroom geometry is assumed with inlet outlet boundary conditions where exhaust fan is playing a major role of displacement ventilation. Study of air recirculation zones and dead zones is the point of interest of this study. Computational fluid dynamics is the most powerful tool in the present era to study the air flow pattern in enclosed and shared spaces

Keywords: **Ansys; Computational Fluid Dynamics; SolidWorks; Fluent; Airflow simulation; computer aided design**
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1.Introduction

The spread of respiratory diseases via aerosol particles in indoor settings is of significant concern (M.R.R.S. van Beest, 2022). There were various studies done for outdoor environment but there is need for indoor air assessment too. The introduction of indoor air quality has opened up various technological advancements in the pandemic era. The importance of indoor air for breathing is now being a active field of study. Clean and helathy air is key to healthy life. Indoor environments are contributing to the potential risk of spreading an infectious disease, as the likelihood of infected people sharing the same air with other people is high (M.R.R.S. van Beest, 2022). Ventilation of shared indoor spaces is crucial for mitigating air-borne infection spread among its occupants. Replacing the air in a room with fresh air is key to minimize the concentration of potentially infectious aerosol generated in the room. Recirculating air flow present at corners and around obstacles can trap air and infectious aerosol. As the

The Development of Composite made from recyclable, and environmentally friendly materials (HDPE and EPDM)

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Abstract—

This topic provides a brief review about different types of composites, matrix, their fabrication process and usage to understand the topic of research in practical and analytical perspective regarding our projects the entire chapter is about previous inventions and designs of composites and their blends, gathered from various sources and records, most important from patented papers and from internet, which could be quickly and usefully accessed for getting relevant information. Environmental global warming is being increased due to the increase in the use of non-recyclable and non-biodegradable materials.In the polymer world, EPDM refer to a viscoelastic polymer substance with an ultra-high molecular weightmaterial. It is hardened by adding fillers, plasticizers during vulcanization to increase strength, abrasion resistance and other desirable properties to meet the emerging demand in aerospace, automobile and various other industrial applications. In this project, two dissimilar eco-friendly polymers (EPDM and HDPE) are blended and compression moulded into required dimension sheets. The project aims to evaluate mechanical strength and toughness, by using ASTM and ISO standards testing methods. The methodology is to first find the missing link through literature research. Then the melted blend of HDPE and EPDM in different proportions are mixed in Brabender and two roll mill machine and then compression moulded into panels using compression moulding machine. This will be followed by a mechanical properties evaluation on the sample carved out from the compression moulded sheets. I-Zod Impact test, tensile test and Flexure test were conducted on four samples (A, B, C, D) in varying proportions. The test results stated that on increasing the amount of Ethylene Propylene Diene Monomer (EPDM) in the composite the tensile strength and flexure strength goes on decreasing. Whereas increasing the amount of EPDM, increases the impact resistance of the material, due to the ductile nature of Ethylene Propylene Diene Monomer (EPDM).

*Keywords—**Ethylene Propylene Diene Monomer (EPDM) Rubber, High-Density Polyethylene (HDPE), Accelerators, Curators, and Fillers.***

DOI Number: 10.14704/nq.2022.20.6.NQ22974 **NeuroQuantology 2022; 20(6): 9981-9989**

The Development of Composite made from recyclable, and environmentally friendly materials (HDPE and EPDM)

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TECHNICAL PAPER

Effect of MWCNTS on mechanical properties of woven fabric hybrid polymeric nanocomposites and finite element analysis of nanocomposite

Suhas Uthale[1] · Dattaji Shinde[2] · Nilesh Shahapure[2] · Sachin Kulkarni[3] · Manoj Nikam[4]

Received: 10 December 2022 / Accepted: 26 January 2023

Abstract

This study focused on the mechanical behavior of hybrid polymeric nanocomposites with 0.1 wt% and 0.2 wt% of multi-walled carbon nanotubes (MWCNTs). Moreover, the fiber orientation effect on the mechanical properties of the hybrid nanocomposites was investigated. Mechanical properties of the hybrid nanocomposites of Glass/Carbon/Basalt fibers were determined. It was observed that addition of MWCNTs in the epoxy resulted in enhancement in the mechanical properties. The hybrid composite and hybrid nanocomposite panels were made using vacuum assisted resin transfer molding (VARTM) method. Test specimens were cut from the composites using waterjet machine cutting and tested in accordance with American Society for Materials Testing (ASTM) standards. From the experimental tests, it was observed that the hybrid nanocomposite with 0.1 wt% of MWCNTs showed improved tensile strength, compressive strength, flexural, and interlaminar shear properties at comparatively low cost. The finite element analysis of hybrid composite and hybrid nanocomposite with 0.1 wt% and 0.2 wt% of MWCNTs were carried out in ANSYS program to validate the experimental results. The experimental results and simulation results were compared with each other. A good correlation between the computational and experimental test results were observed.

Keywords Hybrid composites · Mechanical properties · Epoxy · VARTM method · MWCNTs

1 Introduction

Carbon nanotubes (CNTs) have been received attention of composite industries due to their high aspect ratio, outstanding mechanical and electrical properties. MWCNTs are considered most effective nanofiller in manufacturing of light weight, high stiff, and high strength polymeric composites due to their low density and superior mechanical properties like modulus. MWCNTs are also added into the fiber reinforced polymer composite to improve fiber matrix interfacial adhesion. The dispersion of MWCNTs in thermoset resin plays important role in enhancement of mechanical behavior of nanocomposites. The most common techniques used for uniform dispersion of CNTs in the resin include solvent aided dispersion, direct mixing, magnetic stirring, mechanical agitation and high energy sonication. The combination of direct mixing and sonication has shown the lowest density of nanofillers aggregates in comparison with other dispersion techniques. The incorporation of 1 wt% of MWCNTs in epoxy resin with different aspect ratio showed better improvement in the fracture toughness and impact resistance, while tensile properties has shown limited improvement [1]. The surface functionalization of MWCNTs results in the enhancement of the mechanical properties such as Youngs modulus, tensile strength [1]. The acid treated MWCNTs showed uniform dispersion in the epoxy resin in comparison with untreated nanomaterial [1]. The carbon, the basalt, and the glass fibers with plain weave are considered to fabricate the reinforced polymeric nanocomposites. Due to better properties of diglicidyl ether of bisphenol F (DGEBF) as an epoxy resin [2–4] and MWCNTs were selected for the fabrication of composites because of their compatibility.

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TECHNICAL ARTICLE—PEER-REVIEWED

Studies on Fretting Wear Damage Assessment of Piecewise Linear Systems Having Predefined Gap

Gajendra Vasantrao Patil · Rasika Gajendra Patil · Hemant Maruti Patil · Rahul Shankarrao Warghane

Submitted: 27 September 2022 / in revised form: 15 November 2022 / Accepted: 22 November 2022

Abstract There are many engineering systems where a predefined gap is provided by design. This gap produces a nonlinear boundary condition. This paper is an endeavor to tackle the issue of engineering structures with nonlinear boundary conditions which may lead to premature failure. The effect of stiffness ratio on beam-support interaction parameters, which characterize the response of the system, has been studied. 'Impact force' and 'Contact ratio' are studied which are significant inputs to compute work rate for a prediction of the fretting wear limited life of engineering structures like heat exchangers with baffle supports.

Keywords Gap · Nonlinear · Mode superposition · Direct integration · Piecewise linear · Mode shapes · Dynamic problems · Contact ratio · Impact force

Introduction

Engineering structures often have nonlinear characteristics. There are systems where a clearance gap is provided in design. A very common example is heat exchanger tubes with clearance at supports. This clearance produces a nonlinear boundary condition. This nonlinear system could be modeled as a piecewise linear system [1–3]. In such systems, the nonlinear function is approximated by a series of linear functions, where these linearized functions are continuous. The present researchers have performed dynamic analysis of such a system by finite element method, direct integration or mode superposition.

Figure 1 shows a typical piecewise linear dynamic system, a cantilever beam with two-sided stop, this can be modeled as a multi-degree-of-freedom finite element system.

The dynamic equilibrium equation of motion can be written as follows [10]:

$$M\ddot{U}_{t+\Delta t} + C\dot{U}_{t+\Delta t} + C_{NL}\dot{U}_{t+\Delta t} + KU_{t+\Delta t} + K_{NL}U_{t+\Delta t} = R_{t+\Delta t} \quad \text{(Eq 1)}$$

where M = Mass matrix, C = Linear damping matrix, C_{NL} = Nonlinear damping matrix, K = Linear stiffness matrix, K_{NL} = Nonlinear stiffness matrix, $R_{t+\Delta t}$ = External force vector at time $t + \Delta t$, $\ddot{U}_{t+\Delta t}$, $\dot{U}_{t+\Delta t}$, $U_{t+\Delta t}$ = acceleration, velocity and displacement vectors at time $t + \Delta t$, respectively.

Stiffness Matrix [K]

The formation stiffness matrix for a beam element has been studied by many authors [3, 4]. For the problem studied herein, no effect of transverse shear deformation need to be considered.

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Design Optimization of Thresher Mechanism

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Till date the thresher design is on the basis of test trial results. There is no firm mechanical design process is available. In this research the design of thresher on the basis of mechanical failure approach of design is described. The mathematical modelling of material failure in rasp bar thresher is done. The impact shelling and lattice vibration model at the threshing unit is observed and system modelling is provided. The governing; parameters of system design are trace on the basis of geometric configuration. The design is evaluated for its static structural failure on Ansys. The design is safe for static and dynamic loading. The thresher design approach is validated by statistical tools and the highest threshing efficiency of 98.15 % recorded. The statistical threshing efficiency is validated by estimating the threshing efficiency of on experimentally developed model. The experimental result provides the maximum threshing efficiency of 98.31 %. The maximum variation in results is less than 1%. The design approach proposed provides the best results for thresher design formulation. The performance results give the maximum grain damage of 1.7 %, and the cleaning efficiency of 95.4 %. The proposed design eliminates the traditional test trial design approach and provides the optimum parameters for design formulation.

Keywords: thresher design, design validation, statistical threshing efficiency.experimental validation
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1.Introduction

Separation of grain from the enclosing husk can be achieved by striking the ears or by squeezing [1]. In either case the ears are deposited on hard surface. In mechanical separation threshing unit both these factors are applied. Andrew Mickel in 1785 was the first who introduced thresher mechanism to replace laborious manual seed extraction. The base mechanism for the modern thresher mechanism is same till date [2]. The basic frame model of Mickle thresher consists of four revolving rasp bars attached on a circumference of drum which was enclosed by sheet metal casing now called as concave. Threshing process took place in

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DESIGN & ANALYSIS OF ROTATING TABLE FOR TESTING ENGINE AT CRITICAL GRADIENTS.

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ABSTRACT: *This project presents the design and methodology to build a tilt table arrangement that can simulate different angles and forces to evaluate the transmission and IGB of an engine. The project will not involve the actual repair or modification of the engine, but to help to provide insights and suggestions for improvements. The concept of tilt table arrangement establish a standardized testing procedure to ensure consistency and reliability in testing. Tilt table arrangement to test automatic transmission. The automatic transmission unit is mounted over the tilt frame and then tested foe various gradient and slide slopes, the design is such the two platforms are assembled in such a way that both shows the rotational movement in perpendicular axis ie. One platform having tilting action on X-axis and other platform have tilting action on Y-axis & these platform are at stacked together such a way that their tilting movements combination will make the test cases/ conditions to evaluate the transmission and IGB. The critical potential weaknesses in the transmission and IGB of an engine through the testing process becomes possible. This helps to provide the recommendations for improvements and modifications to address the identified weakness in transmission and IGB's working. Our objective was to use reliable & safe design, consistent output which will help to test all types of transmission and IGB. The theoretical design calculations with consideration of required Factor of Safety (FOS) are discussed with Finite Element Analysis (FEA) of the design components, the additional safety is ensured by using the hydraulic damper system & mechanical lock systems which completes the tilt table design.*

KEYWORDS - *Tilt table arrangement, gradient, reliability, FOS, hydraulic dampers, FEA etc*

I. INTRODUCTION

There are different testing apparatuses for internal combustion engines (ie. IGB & Transmission), turntable system is one of those testing apparatus. Turntables are not typically used for IGBT and transmission testing. The turntable system can be employed in specific situations like gear engagement, quality testing, durability etc. Specific testing methods focus on thermal and electrical performance evaluations for transmissions & IGB[1].

In the in-line system, each internal combustion engine delivered by a main conveyor is transferred onto a carriage which, in turn, transfers the internal combustion engine to one of separate testing units disposed alongside a circuit as the carriage travels along the circuit. The testing units are installed in separate testing chambers each defined by an enclosure or partition walls, and they individually carry out performance tests with respect to internal combustion engines which have been individually transferred to them from the carriage. As each internal combustion engine has undergone the required performance test, it is fetched onto the carriage which, in turn, is caused to travel along the circuit before the internal combustion engine is delivered onto the main conveyor[2].

In the turntable system, a plurality of testing units are arranged on a turntable. Each internal combustion engine delivered by a main conveyor is loaded through a carrying-in conveyor or the like onto a

Design Optimization of Thresher Mechanism

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Use of Waste Marble Sand in Concrete

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Abstract - *Concrete is one of the most important elements used by the construction industry throughout the world. Inflation has been seen in the case of natural sand due to its rapidly increasing demand. In such a scenario waste marble sand would be economical as compared to river sand. And thus, we can tackle one of the environmental problems worldwide today which is the disposal of the waste marble sand or powder material from the marble industry. This paper puts forward the study conducted to understand and explore the suitability of using industrial and quarrying waste marble sand (dust) in concrete as a replacement for fine aggregates. In this paper, we have replaced fine aggregates in concrete with waste marble sand of size 1-2mm (marble fine aggregates) in an M20 mix design as per IS CODE 10262. As waste marble is a low-cost product and it resembles cementitious properties, the strength of concrete is also increased than conventional concrete. It is cheap economical and eco-friendly material for the replacement of natural sand and fine aggregate*

Key Words: *Waste Marble sand, Compressive Strength, Concrete, Ecofriendly.*

1.INTRODUCTION

The term "conventional concrete" refers to the ordinary concrete that we utilize on a daily basis in India. Concrete constitutes are cement, coarse aggregate, fine aggregates, water, and sometimes an additive in the proper quantities. Hydraulic (Portland) cement, sand, stone, and water make up traditional concrete. It was invented nearly 150 years ago as a substitute material to natural stone while allowing for less labor-exhaustive shaping techniques. A stone made of calcite, dolomite, or serpentine that can be polished is known as construction marble. Marble is a term used in the construction industry to refer to any crystalline calcific rock that can be utilized as a building stone. Since ancient times marble has been widely used as a building material [8]. As a result, marble sand has been the by-product that is a critical substance, hence it requires careful environmental disposal. In addition to this, improper waste recycling can lead to environmental concerns that are worse than the waste itself. The marble manufacturing process leads to the procurement of marble sand or dust which is its byproduct. An enormous amount of marble waste is generated as a result of the cutting process. As a result, approximately one-fourth of the original marble mass is retained in the form of sand dust. Adverse effects of discharging these waste materials into the environment would lead to environmental problems such as increased human health effects, soil alkalinity, and so on. As a result, Marble sand can be considered as a replacement for sand (fine aggregates) in concrete resulting to an increase in strength of the concrete. Some of the environmental and ecological issues can be reduced if we utilize such debris to make cheaper and more lasting concrete.

Fig-1: Waste marble sand

Quarrying and processing marble results in waste marble in the form of sand, dust, and other materials, which are dumped in large quantities in landfills, causing a variety of negative environmental effects. As marble dust is a very fine-grained powder can cause soil porosity and a rise in alkalinity, as well as a decline in land fertility if buried in a landfill [5]. Because the disposal of this waste in the environment might cause numerous difficulties for the environment and human life. In this study, we have chosen to use marble in the form of sand in concrete to substitute fine aggregate sand. In the marble quarrying and processing sectors, leftover marble sand is readily available. We collected this marble trash from marble processing companies such as marble shops, factories, and quarries since waste marble sand, dust, or slurry does not easily decompose in the environment and thus generates diverse pollution that has an impact on humans health and the environment.

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SUSTAINABILITY BENEFITS, DURABILITY CHARACTERISTICS, AND COST ANALYSIS OF GREEN CONCRETE/GGBS CONCRETE

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ABSTRACT

Concrete will undoubtedly become the primary building material in the foreseeable future as global civilization advances, and green concrete is a revolutionary idea in the history of the concrete industry. In addition, cement is a key component of concrete, and the cement business is one of the most energy-intensive industrial sub-sectors when taking the entire concrete industry into account. Once that happens, there won't be any lime left on the planet to make cement. Given this circumstance, everyone involved in the construction sector should do research on alternative materials for replacing cement and their applications. Researchers have thus far concentrated on results like energy savings, investment, and pollution reduction. As a result, both qualitative criteria and the plant's existing situation have been largely ignored. Due to factors including using waste products as a partial substitute for cement, avoiding waste disposal fees, consuming less energy during manufacture, and having higher durability, green concrete is frequently also produced at a reasonable cost. In this study, we determine the properties of concrete's durability when we utilize more than 50% of industrial waste i.e. GGBS, as a mineral additive to replace cement in the concrete of grade M45. Additionally, we analyze the costs of the aforementioned Green Concrete/GGBS Concrete as well as its sustainability advantages.

Keywords: GGBS, Ground Granulated Blast Furnace Slag, Sustainability, Durability Characteristics, Cost Analysis, Etc.

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Meticulous Review of Present Trends in Risk Management of Large-Scale Infrastructure Projects

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ABSTRACT
It could be very crucial to achieve project risk in projects of infrastructure production tasks that have been identified as control procedures for you to acquire the undertaking goals in phrases of time, cost, high-satisfactory, and opportunity. The main objective of this article is to discover and evaluate risks concerned with large-scale infrastructure works. Based on a complete evaluation of situations of contracts, 8 categories of the Risk were identified. It is found via way of means of qualitative risk evaluation, disagreement from public bodies, adjustments in layout, and interruption of labor are identified to impact the objectives greatly. This observation has been located that few pointers to alleviate production undertaking risks. The conditions of the contract are used as a device to control risks i.e. risk management and various stakeholders of the project i.e., clients, designers, developer & contractors wants to set up risk control coverage for the entire life of the project. It is resolved that various stakeholders must have to work closely and supportively since from the inception in phase to discourse probable risks well within the period.
Keywords: *Project Risk; Risk management; Risk distribution; Infrastructure projects; Contract document.*

Date of Submission: 24-06-2022 Date of acceptance: 05-07-2022

I. Introduction:

Risk management is critical for any corporate, irrespective of size, activity, or industry. Companies face a huge impact when they fail to detect and assess risk in a timely manner. Thus, risk management entails anticipating future opportunities to avoid losses. According to PMI 2000, Risk in the project is an undefined affair/ailment that, if it befalls, has constructive or adverse impacts on a target of the project. There is a substantial impact on the performance of construction projects in terms of the iron triangle i.e., monetary value, duration, and quality. 'PMI 2000' summarizes Risk Management as the organized method of recognizing, investigating, and answering to project risks. Scope and intricacy of projects grow the capacity to address risks during execution has become a critical component in avoiding unintended consequences. There is no opportunity short of risk, and there is no risk short of opportunity. Risks boost the project's value; in general, more risk equals more prospects. Thus, whereas addressing the risks, project upgrading must even be considered. In this article, several characteristics of management of risk have been expressed, accumulated from literature by several authors all around the world.

II. Review of the Literature:

(Vishwanathan, 2020),By considering the Indian construction project, impact of risk vindicationactions on the accomplishment of overseas infrastructure projects.Using literature review techniques, nine risk mitigations and 3 project accomplishmentmeasures were acknowledged: cost performance, schedule, and consistency. Correlation analysis and structural equation modelling were used to model and analyse the knowledge gained from a review of 105 defendants. Three associated risk mitigation actions were identified: project planning, community involvement, and contract selection. This white paper proposes on developing variety of risk mitigation measures and will be applied for various risks. The findings of this survey will aid construction professionals in India and other comparable countries in fine-tuning the frequency with which projects are completed.Karthik Nagarajan et al.(2022), has written a review Paper for Floodplain Mapping with Applications of HEC-HMS, HEC-RAS, and ArcGIS Softwares – A Remote Sensing and GIS Approach.ShwetaPanaskar et al. (2022), have validated the Gravity Recovery and Climate Experiment (GRACE) Terrestrial Water Storage Dataset using Terra MODIS NDVI Anomaly.Sahil Waqar Khan et al.

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Review of the Green Building – A Sustainable Construction Approach in India as a Developing Country and its Rating System

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Abstract
The developing urbanization and colonization of our society via way of means of human beings have affected the herbal cycles and feature delivered worldwide warming as a massive hassle in nearly every subject of lifestyles, in a single manner or the other. Human beings are struggling for their existence after once they misused the environment and created an unevenness through deforestation and diverse improvement projects (non-inexperienced advocated implements). The production enterprise on my own is liable for the bulk of its destruction of the habitat and so forth if now no longer performed in an unplanned manner. Due to its most effective on the environment, there comes the want of the hour for moving from of control boom of the development region to a whole lot of researched inexperienced initiative advanced era and lowering carbon footprint in whichever possible. The present homes have the ability of most power saving if the retrofit delivered is deliberate and greener for stepped forward great of living. Renovation charges or demolition charges will upward thrust however if inexperienced retrofitting and restoration are performed to a present construction then it is probably better in value than earlier however value financial savings could be an extremely good element to investigate because it headway likewise in its tenure.

Keywords: *Global Warming, Construction, Repair, Green Construction, Green building.*

Date of Submission: 26-05-2022 Date of acceptance: 08-06-2022

I. INTRODUCTION

To an ever-growing extent, the surroundings are ruled with the aid of using systems that represent the seen cultural panorama of normal life, for this reason forming a complicated sample of features and which means wherein human's notion of the world, their approaches, and experience of connections with it are carefully interconnected. With the worldwide global warming phenomena having a profound impact on planet earth, there's a great want in each developed, business nation, and growing nation to deal with environmental concerns. Human societies and ecology both have a high risk of handling enviro problems. Environmental safety has a tendency to intend high-tech electricity structures and recycled substances inside the world, the phrase has plenty larger consequences in lots of growing nations. It inspires a wish this is biological, energetic, and current on this Aeon of fast proliferation and reconstruction. The obligation of layout network to now no longer best exercise layout with inside the context of the herbal surroundings however additionally to teach humans from different disciplines approximately the unfavorable impact of the horrific layout on the wellbeing, protection, and well-being of humans and planet. The phrases sustainability and inexperienced which can be regularly used interchangeably have won a reputation withinside the architecture, engineering, and industry.

1.1 Description

Environmental pollution has reached a point where it can no longer be left to heal on its own. Human action has become vital to regulate environmental pollution and mitigate environmental damage. The building industry is a dominant source of pollution in the climate. The incorrect use of natural resources in building construction, the energy consumed, and the disposal of salvage have a significant environmental clash. There is a great deal of concern about reducing the environmental impact of buildings. These environmental concerns have led to the development of green buildings, which reduce the impact of buildings on the environment. Now it's high time to obey the rules and regulations and to take the required efforts to construct green buildings to reduce the effect of buildings on the environment.

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Integrated Planning office Automation System- A Critical Review

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Abstract
Legislature of Maharashtra has embraced the methodology of decentralized arranging where 5-year arranging is finished based on regions as a unit. After development of Maharashtra state in 1960, Government of India consented to the strategy of adjusted improvement based on region as a unit of detailing of five years plan and yearly plans. In this cycle, locale have the attentiveness to focus on among the different advancement plans inside the expense gave. For this reason, District Planning Committees (DPCs) was comprised in each region under the Article 243rd of the 74th amendment of the Constitution. Region Planning Committees (DPCs) plan different plans, tasks and exercises for the advancement of locale. The DPCs needed a framework which keeps up with and oversee need based plan made by DPCs and could screen framework to classify letters, designate work, track work status, oversee reserves and create reports for these necessities. So an electronic application that robotizes and digitize your workplaces, oversee ventures, works, and screens reserves is created as iPAS (Integrated Planning Automation System). In this paper audit of this online application is examined momentarily and extent of progress is recommended in conclusion.

Keywords:*Finance, district planning, web based application, iPAS*

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I. INTRODUCTION

Digitization and recorded of reports Make a Paper-work free office through Document Journey Management (DJM) Define a work process and following component in the framework. Secure the clients' and frameworks' information by coordinating important safety efforts Assist the administration in dynamic utilizing MIS reports and review preliminaries Bring versatility into everyday tasks at your area of expertise utilizing progressed procedures Portable and got arrangement available by web with legitimate validation Single brought together framework that is completely programmed, vigorous system for every one of the activities.

Figure 1: Login Dashboard (source: UserManual-iPAS)

According to cases concentrated by TESDS, fostered a Cloud-put together office robotization framework based with respect to the DPC's prerequisites. iPAS offered an all-encompassing perspective on every one of the tasks conveyed under the region arranging councils and it permitted the state arranging

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Structural Audit and Selection of Contractor for Building by Using Analytical Hierarchy Process (AHP)

Snehal Pradeep Wakade[1], Prof. Manisha Jamgade[2],

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Abstract - *Building and different designs have specific helpful life. The existence of the structure structures basically relies on arranging, plan details alongside development rehearses and different variables. The investigation discovered that the structures of any country are too important resources and keeping up with them at customary useful state is becoming testing position for emerging nations. The main structure upkeep issues are: plumbing and w/s, latrine, restroom and clean, crumbling and disappointment of electrical issues, unfortunate upkeep the executives and works on, stripping of paint, moistness, surface breaking, development of parasites or little plants and rot or breaking of floor/tile. Rot, the texture and completing of a structure because of carelessness of upkeep destructively affect the items and tenants. Reasons for upkeep issues can be gathered as administrative, specialized, fabricating client related and normal causes.*

There are significant causes, for example, plan deserts, deficient worker for hire and development oversight, utilization of bad quality materials and workmanship, inaccessibility of qualified HR and quality materials, unfortunate support the executives, lacking upkeep store however high and surprising expense, period of building, cataclysmic event and earth settlement, etc. Some worker for hire determination strategies presently in presence are reprimanded as deficient and one-sided, and lacking thought as far as the worker for hire's capacity to accomplish all the while, time, cost, quality and security norms. Without a reasonable and exact strategy for choosing the best worker for hire, the finishing of an undertaking will probably be impacted. This examination inspects an elective project worker determination model called the scientific order process (AHP), which will help development clients to recognize workers for hire with the best potential to convey good results in a last worker for hire choice cycle which did not depend just on the least offered.

Key word: Decision Making, Construction Management, Cost, Analytical Hierarchy Process, Structural, Maintenance, Repair, Deterioration, Damage.

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1. INTRODUCTION

Primary review is a general wellbeing and execution exam of a structure. It guarantees that the structure and its premises are protected and have no gamble. It should be done following examining standards, strategies for non-damaging testing and code arrangements. The underlying evaluating will assist with executing support and fix work opportune which prompts delayed existence of the structure and wellbeing of the inhabitants. Development industry assumes a significant part in the improvement of the country. The choice of a competent worker for hire is crucial for the great exhibition of any development project since they are capable by center exercises all the while. Picking the legitimate worker for hire from various candidates that are accessible today in market is a confounded issue for clients. The Scientific Progressive system Cycle (AHP) is a technique for "estimation through pairwise correlations and depends on the decisions of specialists to infer need scales." It has been perhaps of the most broadly utilized different model dynamic devices." The determination of the best elective will decide the achievement or disappointment of an undertaking, hence we use AHP philosophy for pursuing the right choice interaction quite possibly of the most perplexing issue that chiefs need to address for example determination of worker for hire.

As RCC building becomes old, it must be fixed to expand its administration life range. The debilitating of construction prompts serious deterioration, harm and even breakdown of the structure. In light of a legitimate concern for lodging social orders and public at large it is all things considered important to alert the tenants, that numerous sound designs have fallen due thoughtless and careless inside works and changes. Such disappointment of construction brings about loss of guiltless individuals and property worth of millions of rupees.

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A TECHNICAL REVIEW ON USE OF VEHICLE MONITORING SYSTEM IN CONSTRUCTION INDUSTRY

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Abstract - *The construction business faces a few difficulties on the location that incorporates checking of construction vehicles, precise bookkeeping, the security of laborers, well being of development hardware, mishaps, wastage of fuel because of driver's missteps or absence of value laborers on location interminably expanding interest for innovation which can wipe out or forever address the issues, developing worries of the above issues on building locales are expanding step by step which is now a greater danger to any development organization in our country. For countering these issues we can present a vehicle checking framework for construction vehicles. A procedure is very protected and trustworthy. The idea is an installed application, which constantly monitor working of construction vehicle and describe the situation with the particular vehicle or vehicles on appeal. The Arduino chip interacts sequentially with a Global System for Mobile communication modem and Global Positioning System recipient. The Global System for Mobile communication modem put to use to send place of vehicle from a remote spot constantly. The Global Positioning System recipient modem that utilizations satellite innovation for its route framework will constantly give information like longitude, scope, speed, distance voyaged, and so on. Whenever the solicitation from client is shipped off the communication modem as SMS or can follow live on the Mobile App or Website. The review suggests the utilization of vehicle checking frameworks on building locales utilizing the most recent innovation with a minimal expense procedure that will help the construction business to embrace the innovation and execute it in the field serenely.*

Keywords: Construction business, construction vehicles, Arduino, location, Modem.

1. INTRODUCTION

In-vehicle checking framework - or IVMS - comprises of an electronic gadget or number of gadgets introduced in a vehicle to screen driver as well as vehicle exercises and assist with distinguishing ways of behaving, for example, ceaseless record of vehicle activity, inordinate speed, quick speed increase or sleepy driving, fuel observing, two-way correspondence, geo-fencing, real-time area and some more.

An IVMS gadget can store information for later recovery, or send it to a collector. The data is then broken down to assess the driver's wellbeing and driving practices. In-vehicle checking frameworks utilized this way assist associations that with working business vehicles diminish their pace of mishaps and untimely wear.

IVMS innovation has been embraced in various enterprises and is generally utilized by associations engaged with mining, oil and gas, and open transportation. These checking frameworks consolidate fluctuating highlights and advances, contingent upon the maker and sort of gadget

1.1 NEED OF THE SYSTEM

It is an overall confusion among individuals that when we discuss GPS following, it is just concerning a portable labor force. It is accepted that it is delivery and freightage organizations just that require vehicle global positioning frameworks in their association. Nonetheless, we need to expose this fantasy. Assuming you are a business that has a fixed set-up frozen in-place resources, similar to a development organization, you meet all requirements to be a devoted client of vehicle observing administrations. With armada following, you can guarantee that your machines and vehicles stay where they should be, and are put to use according to the timetable. You won't ever be stressed over your hardware disappearing or being abused.

As industrialization overwhelms the world, it isn't business as usual the development business is quickly pushing ahead with the tide. The hardware that is put to use in this area is exceptionally unambiguous and application-specific. Also, since the apparatus utilized is enormously costly, their proper support, is expected to screen and activity. Such resources are likewise dependent upon rubbery because of their extravagant costs.

2. LITERATURE REVIEW

General:

The survey has been made for tracking down the precise place of moving vehicles utilizing IoT. The global positioning framework utilizes light of GPS & manual structure planned show continuous region. The structure requires functioning affiliation or cannot be Simple GPS tracking system. This system involved a transmitter presented on the vehicles and beneficiaries. The system is utilized by location which is

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

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Node MCU Based Vehicle Monitoring System on Construction Sites and Its Applications Using IoT Method

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Abstract

The construction business faces a few difficulties on the location that incorporates checking of construction vehicles, precise bookkeeping, well-being of development hardware, mishaps, wastage of fuel because of driver's missteps or absence of value laborers on location interminably expanding interest for innovation which can wipe out or forever address the issues, developing worries of the above issues on building locales are expanding step by step which is now a greater danger to any development organization in our country. For countering these issues we can present a vehicle-checking framework for construction vehicles. A procedure is very protected and trustworthy. The idea is an installed application, which constantly monitors the working of construction vehicles and describes the situation with the particular vehicle or vehicles on appeal. The Node MCU chip interacts sequentially with an internet communication or internet of things (IoT) modem and Global Positioning System recipient. The internet communication or IoT modem is put to use to send the place of the vehicle from a remote spot constantly. The Global Positioning System recipient modem that utilization satellite innovation for its route framework will constantly give information like longitude, scope, distance voyaged, and so on. Whenever the solicitation from the client is shipped off the communication modem as Email or can follow on the Mobile App. The Project suggests the utilization of vehicle checking frameworks using IoT method on construction sites utilizing the most recent innovation

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Green Concrete Initiative by Replacing Cement With More Than 50% Mineral Admixtures For Substructure Concrete

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Abstract: As India is a developing nation, construction activity have expanded over the past few decades. There are large-scale infrastructure projects underway all around the country, including the development of airports, dams, sea link bridges, river bridges, metro, rail, expressways and flyover projects. The need for concrete and fossil fuels surged due to the development and expansion of the building industry, which dramatically boosted CO2 emissions into the atmosphere. The development of concrete technology can lessen the burden of toxins on the environment and the consumption of natural resources and energy sources. Cement and industrial waste exhibit chemical similarities. Utilizing GGBS as a partial replacement for cement will lower the cost of concrete while also assisting in a slower rate of cement consumption. This study reviews the use of GGBS -ground granulated blast furnace slag which is the waste product of the steel manufacturing industry, as an additive to concrete that can replace cement to the extent of more than 50%. By reducing energy consumption (the energy needed to create cement) and preventing the depletion of natural resources, materials like GGBS and others generate concrete that is more "GREEN". In this study, an experiment was conducted to examine the mechanical and durability properties of concrete when a mineral admixture, such as GGBS, was employed to partially substitute ordinary Portland cement in M45 Grade Substructure Concrete. Concrete's compressive strength was compared experimentally after 7, 14, and 28 days of curing. Concrete durability tests such as the RCPT-Rapid Chloride Permeability Test, WPT-Water Permeability Test at 28 days & RCMT-Chloride Migration Test at 56 Days are performed on it. Other tests include cylindrical compressive strength, flexural strength, split tensile strength, and strength after 28 days.

Index Terms **- Ground Granulated Blast Furnace Slag; Green Concrete, Compressive Strength, Split Tensile Strength, Flexural Strength, Durability Tests**

I. INTRODUCTION

In the construction sector, concrete plays a significant role. Civil engineering has reached the pinnacle of technology with the introduction of concrete. The most widely utilized and versatile building material, concrete is often used to withstand compressive stresses. Sand, aggregates, and cement are some of the key components of concrete. In addition to being expensive and energy-intensive, the manufacture of Portland cement emits a significant amount of carbon dioxide into the atmosphere. Use of mineral admixtures as a partial cement substitute in both concrete and mortar is one efficient strategy to lessen the impact on the environment. This will likely result in cost savings, energy savings, the preservation of natural resources, and a reduction in waste emissions [02]. GGBS-ground granulated blast furnace slag, FA-fly ash, rice husk ash, recycled glass, construction debris, etc. are examples of natural pozzolanic materials or industrial by-products/wastes that are frequently used in concrete to replace some of the cement. When special performance is required, it is sometimes known as "Supplementary Cementing Materials": Strengthening, impenetrability, low heat of hydration, increased durability, addressing deficiencies in aggregate gradation (as fillers), and other properties. Cement mains replacement is expensive; processing these materials also uses far less energy than cement does. These wastes and byproducts reduce environmental harm and contamination [07]. In this study we are replacing cement with GGBS more than 50% to make concrete GREEN.

GREEN is now used to describe more than just a color. It serves as a representation of our surroundings, or environment. "Green concrete" is a term used to describe concrete that is manufactured from concrete waste, industrial waste, or other environmentally beneficial materials. Dr. WG from Denmark developed the idea of green concrete in 1998. Green concrete is characterized as having at least one component made of waste, a manufacturing technique that does not harm the environment, excellent performance, and long-term sustainability. Reduce, reuse, and recycle principles, or any two other concrete technology procedures should guide the production of green concrete. The three main goals of the green concept in concrete are to reduce greenhouse gas emissions (from the cement industry's carbon dioxide emissions), to reduce the consumption of natural resources—such as limestone, shale, clay, natural river sand, and natural rocks—that are used for human development but aren't returned to the environment, and to reduce the use of waste materials in concrete that contribute to pollution of the air, land, and water. Nowadays, it's important to promote the use of green concrete since it may reduce waste overall, not only carbon dioxide emissions, and has a number of mechanical and long-lasting advantages.

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Original Article

Experimental Study of Industrial and Construction Waste for Improving the Strength of the Flexible Pavement

Pranoti V Pawar[1], Madhulika Sinha[2]

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Abstract *- Flexible pavement is primarily used in the construction of roads. Asphalt pavement is a binding organic material made from the byproducts of crude oil. Connecting to the various rural areas is, of time, important for the growth and development of the country. Major connectivity is made by flexible pavement. Thus, it is necessary to enhance the quality of bituminous roads to avoid major accidents on the road. As in today's scenario, the waste like plastic and washout bitumen from the old road is increasing day by day. It is necessary to utilise this waste to its maximum percentage such that the quality should enhance or there is no decline in quality compared to conventional material. In this paper, Conventional VG-40 Bitumen is studied for the Sub-base / DBM of flexible pavement. Further bitumen replacement of 1.25% interval ranging from 5% to 10% by CASE 1 – Shredded Plastic & CASE-2 Recycled Asphalt. All the samples were tested as per the standard testing parameter of bitumen and tested samples of aggregates and coated aggregate as per the CASES.*

Keywords *- Normal Aggregates, Plastic waste, Bitumen, Modified plastic Bitumen, Recycled Asphalt Pavement (RAP).*

1. Introduction

Transportation facility is an essential factor in today's development and population. During construction, the transport facility is time-dependent on roads. In that, Bituminous roads are essential in today's infrastructure. Bitumen has good binding properties used as a binder in road construction, and modifies by mixing with waste. This modified bitumen mixes Natural and RAP. It shows a better binding property, stability, and more resistance to water, increasing the durability of roads with resistance to wear and tear of the road.

Waste plastic is a non-decomposable material; it is one of many wastes that take too long to decompose, and researchers have found that normal plastic items take up to 1000 years to decompose in landfills. Plastic wastes consisting of the main polyolefin from items such as carry bags, cups, thermocol, and packaging films pose a significant problem for their disposal.

The use of RAP is considered an inexpensive & environmentally sustainable process; it preserves natural resources & compared to virgin asphalt mixtures, can yield comparable structural efficiency. This material can be reused in new asphalt mixtures because the components of the mix—the asphalt binder and aggregate—still have value. Using RAP in new mixtures can reduce the amount of new material that has to be added, saving money and natural resources. The old binder may reduce the need for the new binder to be added. During the construction and service life of the roadway from which the RAP obtains, the asphalt binder in the roadway became aged or hardened by reacting with oxygen in the air.

The use of RAP has been in practice since the 1930s and is necessary to reduce the cost of construction materials, reduce the use of petroleum-based products, and conserve natural resources by requiring less virgin aggregate and asphalt in road construction projects.

Why the use of Plastics/ RAP waste?

- Durable & corrosion resistant.
- Good insulation for cold, heat & sound, saving energy and reducing noise pollution.
- It is economical and has a longer life.
- Maintenance-free.
- Easy processing/installation.
- Lightweight.
- RAP is more beneficial and more cost-effective.

2. Literature Review

An Indian scientist who has worked on waste management is Dr. R. Vasudevan. The use of Plastic in road construction was decided after he investigated the harm that heavy rains do to roadways [1]. The performance of asphalt

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Book Title: Advanced Communication and Intelligent Systems

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Dynamic Load balancing in SDN using Energy Aware Routing and Optimization Algorithm

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***Abstract*—In software defined networking, load balancing is a crucial management operation for moving traffic packets from source to destination. Ant Colony Optimization (ACO) was employed with dynamic load balancing to enhance SDN performance in existing works. In order to improve the search for the ideal path, response time, span-time, and energy consumption, it is proposed in this article to employ energy-aware routing with a Genetic Algorithm (GA) and ACO load balancing. The goals are to minimize energy consumption while maintaining a quality of service for user flows and to achieve link load balancing. Simulation results demonstrate that the proposed scheme performs better in terms of response time and energy consumption.**

***Index Terms*—Software Defined Networking, Load Balancing in SDN, Genetic algorithm, Ant Colony Optimization**

I. Introduction

Internet protocol networking world needs an upgrade to effectively handle the massive increase in network traffic caused by the rapid global expansion of the Internet of Things (IoT). To effectively address this problem, Software Defined Networking (SDN) was developed. SDN modifies and replaces traditional network management by vertically partitioning with network components, separate implementing network controller logic inside the routers and switches, and centralizing network control. It also introduces to programming the network logic. The most common method of communication between the switch plane and control plane in SDN is the OpenFlow protocol [1].

SDN solutions are designed to enhance network control and management. The architecture is divided separately into three layers: applications, control, and infrastructure, which communicate through APIs. The application layer is where your organization's application lives. This can include anything from intrusion detection and threat detection systems to firewalls and load balancers. Unlike traditional networks, that require specialized apps to manage data plane behavior, SDNs use controllers. The control layer is the SDN's brain. It runs on its own server and manages network policies as well as data traffic flow. It communicates with the system's APIs both northbound and southbound in the SDN structure. The physical aspect of the network is represented by the infrastructure layer. It is made up of switches that route incoming and outgoing network traffic to their respective destinations. SDN technology streamlines and simplifies how businesses manage data flow within their internal networks. There are many advantages of SDN. It reduces the complexity of operations and does not require manual configuration. Simple third party integration, open APIs for quicker time to market, improved network management and visibility reduce the hardware footprint and cost [2]. SDN was also used by CloudSeeds to build a highly robust infrastructure. CloudSeeds' approach has eliminated traditional Layer 2 issues such as broadcast storms and switching loops, allowing it to maximize operational efficiency and customer satisfaction by utilizing its available capacity. In this article, LB is powered by an SDN that combines energy-aware routing with GA and ACO, called Energy Genetic Ant Colony Optimization (E-GAACO). The current ACO algorithm based approach makes use of a positive feedback mechanism to update the flows path information as they are transmitted. However, this might lead to a local optimal solution and erroneous path selection. Although the local optimal solution can be avoided using the random selection policy, even a suboptimal solution is not guaranteed. These problems hinder ACO's ability to choose the best SDN path. ACO still has problems with the trade-off between random selection and the local optimal solution. Therefore, GA is used in conjunction with ACO to reduce crashes and improve LB for SDN. In this work, the energy optimization model is also employed with some constraints to illustrate the energy sensitive routing problem. A two-stage approach has been proposed to solve the modeled energy-aware routing problem. The first stage, the periodic offline phase, builds the optimal energy subgraph from the original network tree. The second stage, the event-driven online phase, finds an appropriate route for each incoming data stream based on the size of the incoming data stream and QoS requirements to achieve the best possible load balancing of the result. network connection. The ant's behavior became the basis for the ACO algorithm. All ants roam aimlessly at first, but eventually return to the nest after leaving the pheromones in search of food. That way, instead of wandering aimlessly, other ants can follow the trail of the pheromone. This method was used to identify and correct computer network problems and is the best network path. Several ACO-based schemes, such as Ant-Net, Ant-HocNet, and Hop-Net, are used to address the routing problem of computer network paths [3,4]. Genetic algorithms are based on the selection and development of genetic

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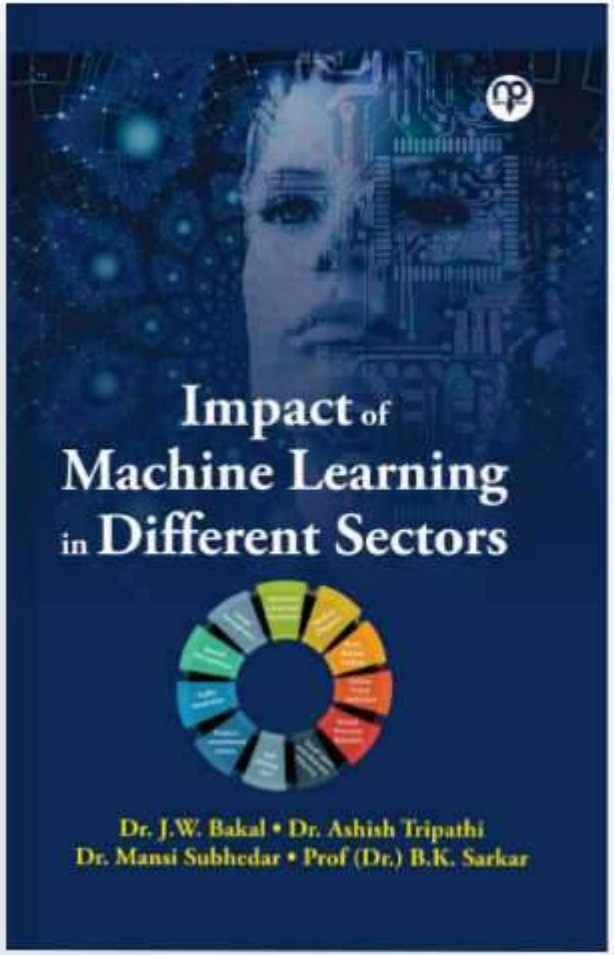

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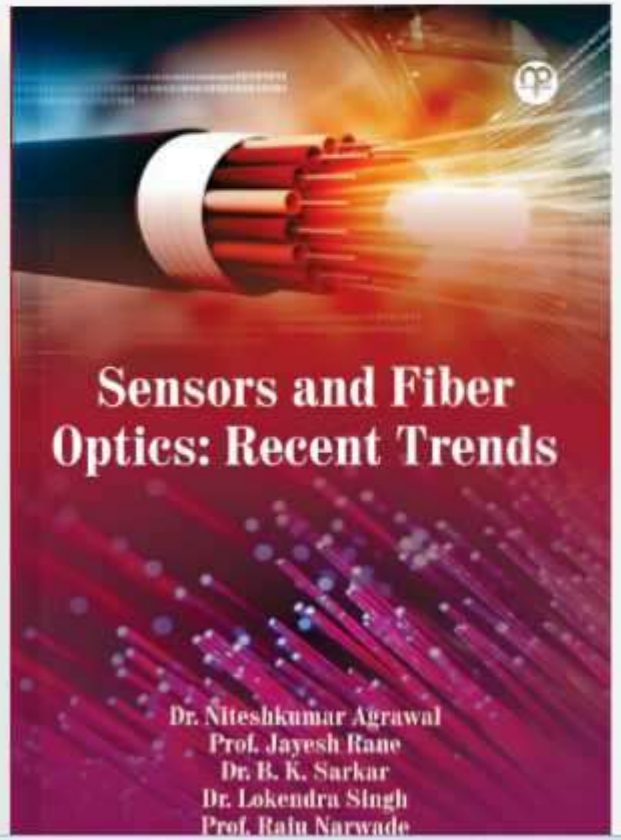

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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"Solar Cell Parameter Extraction"

Mr. Rohit Goyaji, Mr. Monish Bhagat, Mr. Chirag Patil, Mr. Hritik Mhatre
Prof. Asokan Selvaraj
Student, Department of Electrical Engineering
Assistant professor, Department of Electrical Engineering
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Abstract: To develop precise solar cell simulators or design a high-performance photovoltaic generation system, it is important to accurately understand the physical properties of solar cells. However, solar cell models have a non-linear form with numerous parameters.
To obtain accurate parameter values, assumptions that differ from real operating conditions must be made to avoid computational complexity. In this paper, a new method for extracting parameter values is proposed. The proposed method deduces the characteristic curve of an ideal solar cell without resistance using the I–V characteristic curve measured and reported by solar cell manufacturers and calculates the difference between the deduced and actual measured curves. In addition, the precision of the proposed method is demonstrated by calculating the correlation between the I–V characteristic curve based on modeling parameters and the I–V curve actually measured employing the least-squares method.

1. Introduction

Today the demand of electricity is a crucial problem all over the world due to increasing population, industrial demands and digital technology developments. Renewable energy (RE) resources play a prominent role in the satisfaction of the electricity demand. Solar, hydel, wind, geothermal and tidal energies are some renewable energy sources. Out of these, solar energy is the most significant system due to its reliability, clean and harmless emissions to the environment. The low conversion efficiency of solar PV module has triggered a constantfocus for the improvement of its conversion efficiency in the name of maximum power point tracking (MPPT) with the help of the parameter extraction process

Among existing methods to extract solar cell parameters, a relatively simple method is to estimate series and shunt resistances of solar cells using the slope of the current–voltage (I–V)curve at the point of open circuit voltage and short circuit current, respectively.

Solar cell parameter extraction is a crucial aspect of analyzing the performance of photovoltaic devices. By accurately determining the parameters of a solar cell, researchers and engineers can understand how the cell operates and identify areas for improvement. In this report, we will explore the various methods used to extract solar cell parameters, including the current-voltage (IV) curve, the external quantum efficiency (EQE), and the capacitance-voltage (CV)

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Design of an On-grid Photovoltaic system

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Abstract: The exhaustion of conventional resources and its effect on climate requires an urgent call for the substitute power resources to convene up the current power requirement. Solar energy is an endless, unsoiled and prospective energy source among all other nonconventional energy options. As more concentration is being done on focal point for the development of Renewable energy capital globally. To ascertain their viability, it is necessary to do the economic and technical assessments of these resources. This paper presents designing aspects and assessments of solar PV system based on field and actual performance. The study is based on design of solar PV system and a case study based on Panel Sizing & cost analysis of 20 kW off-Grid photovoltaic energy system.

Index Terms **- Solar Panel, Solar Panel Calculation, Photovoltaic, Basics of Solar, Solar Calculator**

I. INTRODUCTION

Photovoltaic is a technology that reliably converts solar radiation into electricity. There are different types of modules depending on power ratings. Every module has a number of solar cells. Solar cells are fabricated by means of semiconductors such as silicon. Photovoltaic cells generate electricity in clean and reliable manner which is the prime concern for today's environment. Variation in temperature affects the efficiency of solar module greatly.

Due to these variations this technology faces enormous challenges in its power quality performance. Solar photovoltaic standalone systems have better power quality as compared to grid integrated systems. In standalone systems batteries connected with MPPT charge controller tolerates all fluctuations of temperature and radiation associated with environment.

In this paper, 20kW PV system is designed for 5th floor of engineering building. This is small roof top system and its performance based on cost analysis has evaluated using PVsyst software. PV system software uses the information of total load to calculate generated power, used power and unused power.

The PV system has different categories such as On Grid system, Off Grid system and Hybrid system. These use to save the energy and reduction of electricity bill.

1. PV Technology:

The basic unit of a photovoltaic system is the photovoltaic cell. Photovoltaic (PV) cells are made of at least two layers of semiconducting material, usually silicon, doped with special additives. One layer has a positive charge, the other negative. Light falling on the cell creates an electric field across the layers, causing electricity to flow. The intensity of the light determines the amount of electrical power each cell generates.

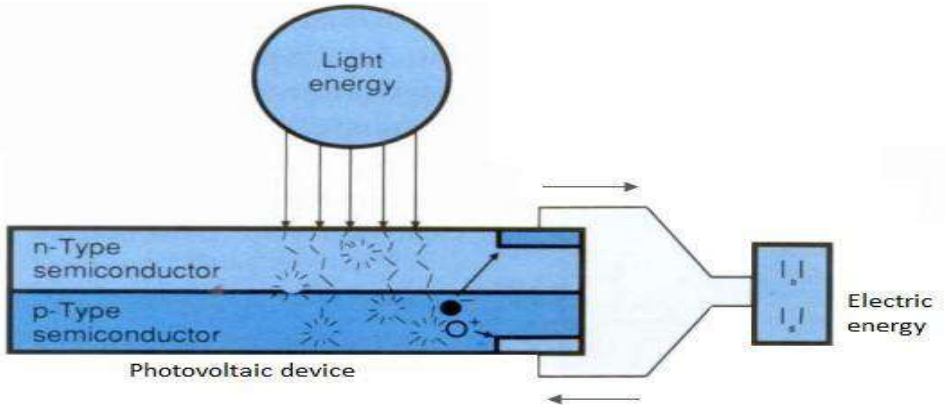

Figure no 1: PV Process

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ENERGY AUDIT OF PRASOL CHEMICALS AT KHOPOLI

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Abstract: Energy consumption is on the rise all over the world. Owing to the rise in population and increasing Human Development Index (HDI), this trend is expected to carry on, resulting in increased global warming and fast depletion of fossil fuels. Hence, it is essential to reduce energy consumption, for which, energy conservation is needed. Energy audit is one of the process by which we can implement energy conservation. For this project, we are conducting an Energy Audit on "Prasol Chemicals", a chemical supplier industry at Khopoli. Our aim with this project can be divided into two segments, first is to reduce maximum load demand without affecting the production capacity of industry and second is to reduce losses occurring while transmission and consumption.

We would recommend some changes in equipment, increasing maintenance and suggest some alternative energy sources, which would result in decreasing the yearly budget for the industry, increasing their profits, as well as decreasing the overall carbon footprint of the world.

Key words: Energy audit, energy efficiency, energy conservation, Energy billing, Energy Saving.

1. Introduction

An energy audit is a systematic examination of how power is used within the organization with the goal of discovering and quantifying energy waste. It will aid in reducing energy costs, reducing pollution, enhancing safety, and suggesting ways to improve the operational procedures of the programme. It is the secret of a machine designed to depict and pursue total energy. The audit transforms the protective measurements into reality by providing the technically feasible guidance with economic and other organizational factors within a specified period. The references to

the organization for better energy usage are established by this review. A database is provided by the review process in order to keep the overall power utilization analysis. It is a method through which we can lower the system's input power requirements without having an adverse effect on the output. Prasol Chemicals in Khopoli is undergoing an energy audit, which requires input from several processes as well as historical data on output level and specific power use.

We have created a list of prospective courses of action, calculated their potential savings, and determined how best to use our limited resources. Setting a priority for its implementation would be the next stage. We anticipate that the administrators of the institute, the staff, and the students will endeavor to ensure that the recommendations are implemented to the fullest extent possible and that this work is successful.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Design of Solar Canopy With Multiple Applications

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Abstract: Solar Canopy are starting to become more popular for people taking advantage of existing outdoor parking spaces to generate their energy needs. Solar canopies are renewable source of energy which is used for multiple purpose. A solar canopy is a structure lined with solar panels on top where you can park your car underneath. The electricity from the solar panels feed the energy to your home and it can also be used in industrial areas, just the same way as if you had the panels mounted on your roof. You can link the solar carport to a car charging unit, facilitating the process and eliminating regular power from your electric car system. Just with some changes in design we can harvest rain water, later on the harvested rain water can be used for car washing, solar panel cleaning and for drinking by purifying it.
The savings in your electricity bills will finance the entire purchase and installation of the canopy. It will also increase to your home value when it comes time to sell in terms of aesthetic and energy savings for prospective buyers. Whatever structure is right for you, a carport or canopy, an experienced solar installer can help you in setting them up.

1. Introduction

The world is constantly looking for more sustainable sources of energy, and the latest development in this effort to reduce our dependence on fossil fuels is the solar panel canopy. Solar canopies are a revolutionary way to bring renewable energy production into the public spaces we use every day, such as parking lots. By taking advantage of cc space, solar canopies harness the power of the sun to generate electricity.
Solar panel canopies are rapidly becoming popular for businesses and public places to take advantage of the sun's rays to power their vehicles. As more people become aware of the potential benefits that these solar canopies offer, there is growing interest in how they will shape the future of modern parking lots.

1.2 What is Solar Panel Canopy?

Commercial solar parking canopies are typically seen in malls and other locations with lots of parking, as was already indicated. Customers are given a shaded parking space and protection from the elements thanks to solar-powered canopies for parking spaces.
The carport, also known as a canopy, is an excellent place for a charging station and will protect the automobile or truck. A business owner or industrialist might decide to add a solar panel canopy to their existing solar array or choose a solar parking canopy instead of a roof or ground mount installation.

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Smart Solar Energy Monitoring System Using IOT

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Abstract : Presently we are invading in a new period of modernism i.e., Internet of thing (IoT). By using the IoT supervising solar energy can greatly enhance the performance, monitoring of the plant. Renewable energy source is proven to be reliable and accepted as the best alternative for fulfilling our increasing energy needs. Solar photovoltaic energy is the emerging and enticing clean technology with zero carbon emission in today's world. To harness the solar power generation, it is indeed necessary to pay serious attention to its maintenance as well as application. The IoT based solar energy monitoring system is proposed to collect and analyzer of the solar energy parameter to predict the performance for ensuring stable power generation. It is a technique to keep track of the dust assembled on the solar panels to induce the maximum power for active utilization. The amount of output power of the solar panels depends on the radiation hit to the solar cell. All the panel are attached and the sensors are precisely connected t the central controller which supervise the panels and loads. Thus, user can view the current, voltage and sunlight.

Index Terms **- Solar Panel, LCD screen GSM board, Voltage sensors, Current sensors, connecting cables, Power supply, Temperature Sensor, Humidity sensor, Soldering equipment.**

I. INTRODUCTION

The Internet of Thing (IoT) is one of the most important technologies of everyday life, which helps people live and smarter. An IoT is a device, which is used to enable the connection between machine and the cloud. This technology helps to exchange the data between the connected devices on the available network.

Through the internet the user can acquire the data and control the device from any place all over the world. It is an ecosystem which consist of web enabled gadgets that use processors, sensors, and other communication hardware devices to fetch and send the data. By using IoT we can set up machine to machine connection or device to device connection without human interference. It also utilizes computing facilities and software system for information processing. The need for using IoT technology in the solar power monitoring system is as the range of sun's radiation is not fixed and may vary according to the location, time and climate conditions, the solar panels which are exposed.

Solar power has become very trendy as it is available in abundance and solar power generation is also cheaper in the conversion technology. In this technology the light energy is converted into electrical energy which is known as photovoltaic effect and this is called solar energy. By using solar power, the pollution will be reduced and by monitoring it the energy forecasting, households and communities, the productivity can also be enlarged. By monitoring this system, we can know the status of it and shown when there is a problem which is so helpful. Solar energy is universally all over the world and can contribute to minimize the dependence of energy imports. In 90 minutes, enough sunlight strikes the earth to provide the entire planet's energy needs for one year. Solar PV leads to no greenhouse gas emission and

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An Artificial Intelligence based Rainfall Prediction System

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Abstract— **A design for a weather monitoring system is presented. One of the most challenging problems in the world is weather forecasting. The suggested system enables online reporting of weather parameters. It enables users to access weather statistics online without the aid of a weather forecasting organisation. The system tracks the weather and provides live reporting of the weather information using sensors for temperature, humidity, and rain. The system continuously checks the temperature, humidity, and rain using a rain sensor and a temperature sensor. The system continuously sends this data to the microcontroller, which interprets it and then sends it through a Wi-Fi connection to the online web server. To be viewed on the internet garçon system, this data is continuously streamlined. Also, druggies can produce cautions for specific situations, and the system will notify them if the rainfall parameters change from those situations. As a result, the IOT- grounded rainfall reporting system gives guests access to a dependable internet- grounded rainfall reporting system. The monitoring of the rainfall using drugs principles, in addition to a number of statistical and empirical styles. Also, to acquire meteorological data from credible weather service providers, the suggested system makes use of Application Programming Interfaces (APIs). These APIs provide a wide range of meteorological information for numerous areas across the world, including temperature, humidity, precipitation, wind speed, and more. The system is adaptable and expandable, allowing users to request weather information for various places and times**

Keywords: - Temperature, Weather, Notification, Rain sensor

INDROCTUCTION

Weather monitoring is the use of wisdom and technology to prognosticate the condition of the rainfall for a given area. The system stores data collected at pre-determined intervals, with real-time announcements for supervision and analysis of environmental parameters like humidity, temperature, rain, air pressure and altitude. It contains an ESP8266 (micro-controller) which is used to collect data and information through various examinations. Similar type of system can be used in control terrain like husbandry granges and aqua culture. The idea behind it's substantially rainfall monitoring and monitoring at micro-ecological position, covering forthcoming situations to sound cautions during inimical circumstances.

Automatic Detection and Prediction of Cardiac Arrest Through Gadgets

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Abstract: This study proposes a device capable of monitoring pulse rate and temperature to create a reliable patient monitoring system for healthcare professionals. The system uses various sensors and a Naïve Bayes classifier to monitor patients who are either hospitalized or performing daily activities. The project aims to create an IoT-based healthcare monitoring system that provides real-time data on a patient's physiological conditions. The system sends email alerts when hardware readings exceed or fall below threshold values. By utilizing multiple sensors and microcontrollers, the system can gather information on a patient's physiological conditions. Additionally, the project aims to incorporate basic machine learning capabilities for predicting heart attacks and providing necessary medical advice.

LINDROCTUCTION

The Heart Attack Detection model employs machine learning algorithms and various sensors to detect heart conditions in critical patients who may be unable to contact a doctor or family member. To address this issue, an **Alert Generation System** is proposed, which sends automatic alerts when data exceeds predetermined thresholds, while also continuously storing all records in a cloud database accessible to medical professionals. This project aims to create an intelligent, lightweight, and **portable healthcare assistant** system to enhance patient care and staff efficiency. The model uses decision trees and other machine learning techniques to classify patient attributes for diagnosis and treatment.

II.SCOPE

The objective of this project is to create a healthcare system that extends beyond the hospital and benefits patients with limited access to medical care. With advances in medical diagnosis and treatment, it is unjust to deny anyone basic healthcare due to a lack of resources. The project aims to make healthcare more inclusive and accessible, while also increasing service availability. By implementing this program, hospital staff can work more efficiently and effectively. Additionally, the project includes research and examples of heart disease prediction to improve patient outcomes

III.LITERATURE SURVEY

This research paper employs classification techniques to predict cardiac problems in patients, and includes comprehensive information on coronary heart disorders, including facts and other risk factors. The study utilizes data mining techniques such as Naive Bayes and Decision Tree models to predict heart disease. In addition to the predictive models, the paper also presents a detailed discussion of heart illnesses, heart attack symptoms, and various types of heart diseases. Through this study, the authors have gained valuable insights into the intersection of data mining and cardiac disorders.

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Smart Traffic Management System

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Abstract

In many cities around India and other nations, traffic congestion is a serious issue. Traffic congestion is a result of signal failure, ineffective law enforcement, and inadequate traffic management. One of the main issues with Indian cities is that the existing infrastructure cannot be expanded further, leaving better traffic management as the sole solution. Constant traffic has a detrimental effect on the economy, the environment, and everyone's quality of life. Therefore, it is imperative that the traffic congestion issue be managed adequately. There are numerous techniques for managing traffic, including wireless sensor networks, inductive loop detection, infrared sensors, video data processing, and ultrasonic sensors.In order to gather, process, and store real-time traffic data for such a scenario, this research suggests an AI-based system paradigm. The goal is to increase mobility by using roadside messaging devices to deliver real-time traffic reports on traffic congestion and unexpected traffic events. To minimise excessive traffic flow by allowing a significant number of vehicles to cross the traffic light, an intelligent AI-based traffic signal monitoring system using smart algorithms becomes essential.

Keywords : Traffic congestion, AI-based system, Traffic management, real-time traffic ,traffic flow.

INTRODUCTION

Vehicle utilisation has skyrocketed globally over time. As a result, the flow of traffic on the roads has become confusing and chaotic. Currently, urban areas are facing a serious problem with traffic congestion that is causing quality of life to decline, economic losses, and environmental degradation. The ineffective working of traffic signals is one of the primary causes of traffic congestion. Traditional traffic signal systems frequently have fixed signal timings that do not change to accommodate shifting traffic patterns or react to real-time circumstances.

As a result, traffic signals frequently perform below optimum, causing delays, gridlock, and aggravation for motorists. It covers a significant problem that metropolitan areas face and offers information about the potential advantages of adopting cutting-edge technologies in traffic signal operations. By offering recommendations for enhancing traffic flow and easing congestion based on solid evidence, the results of this study can benefit the area of transportation engineering.

This Management system leads toward smooth management of traffic over a signals. The lane whose having the more vehicles are preffered first to go. Here we overcome the pre-defined timing of signal and give preference to the lane having more traffic than other lane. This project is aims to contribute to the field of transportation engineering by investigating the effectiveness of an intelligent traffic management system for traffic signals.

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Malicious URL Identification UsingMachine Learning - Brosafe

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Abstract

Concerns about the security of web material, particularly URLs, rise along with the use of the network. For this assignment, we created a website that calculates the percentage of safe URLs based on machine learning algorithms. On our website, we have implemented a pipeline that pre-processes URLs, extracts their features, and then subjects them to a machine learning model that has been tuned using a collection of tagged URLs. We tested several feature extraction techniques, such as domain, HTTPS protocol, and URL length, and we evaluated using measures like precision, accuracy, recall, and F1 score Our website provides a user-friendly interface that allows users to enter a URL and obtain an immediate safety assessment in the form of a percentage. The percentage reflects the likelihood of the URL being safe, based on our machine learningmodel's prediction. We evaluated the performance of our website using a set of URLs. The experimental evaluation revealed that our website had a high F1 score and accuracy and could provide trustworthy safety assessments for a wide variety of URLs. Overall, our project emphasizes the potential of this methodology for improving user awareness and online security while demonstrating the efficacy of machine learning techniques for URL safety analysis. Individuals, businesses, and internet service providers can use our website to evaluate the security of URLs and guard against malicious material.

Keywords— Machine learning, dataset, pre-processes, F1 score, URL, evaluation, online security.

I. INTRODUCTION

The internet was created to help people learn and communicate, but there are some harmful components that could upset this balance. Such a component is harmful software. Malicious programs are pieces of code created with the goal of accessing a computer and interfering with its operation. There are numerous methods for malicious software to enter a computer. Focus on a typical method used by malicious programs to access systems, which is by browsing malicious websites.[3] Malicious URLs pose a serious threat to online security because they can be used in schemes that cause victims to lose money, personal information, and accounts. The most common method for detecting and responding to these threats is the use of blacklists, but this method has many challenges when responding to new threats. We are concentrating more on machine learning algorithms because of URLs, and this initiative is specifically about those algorithms. The quantity and severity of network information security risks are rapidly rising. Hackers today mostly target end-to-end technology and take advantage of human weaknesses.[1] In general, using the Machine Learning (ML) technique, malicious URLs can be detected in two stages that are detailed below. In order to identify malicious

Blood Detection and solution for Accidental Victims

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***Abstract*—In India, during the past many years, there have been cases of road Accidents, hence nearby 40% to 50% lives are lost due to unavailability of blood in time. During this climacteric situation the system aims to identify blood type precisely and quickly which is impossible till the patient reaches the hospital. Our system saves that time and finds a correct result in a few minutes using image classification algorithms, cnn for blood group detection. And also the system provides a platform for the victim (patient) to find available donors at the right time in emergency situations by broadcasting, fetching data from nearby hospitals, clinics, dispensaries, etc.**

***Index Terms*—Antigen, Blood Samples, LBP (local binary pattern), cnn, Pattern Matching, Availability**

I. INTRODUCTION

In India, during the past many years, there have been so many cases of road Accidents .People lose their life due to blood loss. The system finds a way to help these accident victims by identifying and arranging the required blood group timely. As of now, blood group identification is done manually by pathologists, which consumes a lot of time after the victim gets admitted to the hospital. Our system saves this time and finds an accurate result while the victim is rushed to the hospital in the hospital van. The system is also eligible to find the donor in an emergency situation by broadcasting, fetching data from nearby hospitals, clinics, dispensaries.

II. REQUIREMENTS

Anaconda: Anaconda, a commonly used variant of Python programming language, is particularly favored in the domains of scientific computation, data analytics, and machine learning. The software comes equipped with an extensive collection of pre-loaded features and instruments for analyzing and displaying data, such as NumPy, Pandas, Matplotlib, Scikit-learn, and Jupyter Notebook.

Python 3.7: python is general purpose programming language.

Jupyter Notebook: An interactive computing and data analysis environment that is web-based and open-source is provided by Jupyter Notebook. Users are enabled to generate and distribute documents that have real-time code, formulations, graphs, and storytelling texts. The Jupyter Notebook offers support for several programming languages, such as Python, R, Julia and several others.

Hardware Requirements:

GPU: A Graphics Processing Unit (GPU) is a uniquely designed processor that has the ability to handle intricate calculations and tasks associated with graphics and the display of visual elements. GPUs are utilized to increase the speed of operations that consume heavy graphic processing, including but not limited to gaming, editing of videos, and simulation of scientific formulas. Contrary to the CPU, which is intended for accomplishing assorted computing activities, GPUs are specifically engineered for concurrent processing and have the capacity to execute numerous calculations at the same time. Tasks that involve extensive data and complicated mathematical calculations are well-suited for them since they are exceptionally effective. Tasks are frequently carried out by partnering GPUs with CPUs..

RAM: Minimum of 4GB RAM is compulsory but 8GB RAM is recommended.

Processor: Minimum i3 Processor with 7th Generation is recommended.

Operating System: Windows 8 or more, MaxOS, Linux

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Deep Learning Based Cyclone Intensity Estimation using INSAT - 3D IR Imagery

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ABSTRACT:

The discovery of unknown regularities in the existence of cyclones intensity and abnormalities in previous observations. This could help humans interpret changes in the intensity of tropical cyclones. The ideology has inspired us to detect the tropical cyclone using satellite imagery. The system uses deep learning studies and hurricane satellite data to provide an automated technique for cyclone estimation. The existing system requires a longer time complexity to produce tropical cyclone intensity estimation.

***Keywords*— Deep learning research, Intensity, Estimation, and less timing complexity.**

I. INTRODUCTION

Rapidly rotating storms known as Tropical cyclone are characterised by low pressure centres, little low-level atmospheric wind motion, and significant rainfall. Natural disasters, casualties, and property destruction could result from this.

A mature cyclone has an "eye" in the centre that is surrounded by a strong wind ring. According to studies, powerful winds causing seawater inundation are responsible for nearly 90% of the damage. Multilayer Perceptron uses the model presented here to train and test the feature values of TC images (MLP). MLP is a supervised learning approach. MLPs are feedforward artificial neural network subsets with at least one hidden layer and input, output, and output layers. with the exception of the input nodes, each node in MLP is modelled as a neuron with a nonlinear activation function.

The backpropagation algorithm is a supervised learning method for training and testing models.

V-Code: Online Code Editor

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***Abstract*— V-Code is an online collaborative code editor designed for remote software development teams. It features real-time collaboration, Compilation & Execution of code and gives suggestions regarding errors, collaboration using SOA between client and server through collaborator tools, error suggestion through Open API's machine learning techniques. The system is built using web technologies such as Nuxt.js on the client side, and Node.js, Python Flask and Express on the server side. V-Code has the potential to improve the productivity of code editor teams and it also represents a significant contribution of collaborative effort towards rectifying code errors.**

Keywords: **Collaborative Software Development Team, Online Code Editor, Open API, Error Suggestion**

I. INTRODUCTION

Our system aims to cater to the needs of coding enthusiasts of all levels, from beginners to professionals, and facilitate the learning process by providing a range of features. These features include live code sharing, a playground for multiple programming languages, a web development playground, and an online community for coders. The live code sharing feature allows users to collaborate on code in real-time, which is especially useful for remote team collaboration. The playground offers an environment for users to practice programming languages like Java, Python, Ruby, C, C++, and more. Finally, the online community provides a platform for users to connect with other coders and solve errors in their coding systems. Overall, our system aims to make coding more accessible, collaborative, and enjoyable for coders of all levels.

II. SCOPE

The system aims to develop a web-based application that offers a collaborative editor, compiler, and execution environment for programming languages. The system will be accessible to users without the need to download or install any software on their local machines. The collaborative editor will support multiple programming languages and provide various features. The compiler will be integrated with the editor and provide real-time feedback to users on any syntax errors or other issues. Additionally, the system will include an execution environment for users to run and test their code. Overall, the system seeks to provide a seamless and accessible programming environment for users of all levels, making it easier for them to collaborate and work on code together.

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SEHD – Smart Eyes Health Detection Application

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AUTOMATED NOTES MAKER FROM AUDIO RECORDING

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ABSTRACT: Speech Recognition technology is a rapidly developing engineering technology. This design was created and developed with that reality in mind, and some effort was made to accomplish this goal. Nearly 20 people globally are affected by various illnesses; many of them are blind or have poor hand function. It has a variety of operations in various fields and offers implicit benefits. In those particular situations, the automated notes creator from the audio recording system greatly assists them, allowing them to communicate with people by using voice input to operate the computer. Think about the millions of persons who are unable to use their hands, making codification impossible. operation will be useful for instructors as well as scholars as they can record the lecture and can relate that note subsequently. Our proposed system takes audio train for those people who can't attend the class and have disabilities, indeed for those people who are lazy or don't have time to attend lectures can refer these notes. Our proposed system is suitable to transform the input audio to text and identify the speech. The operation captures real time voice data and process it by using algorithm and convert it into text and simultaneously it will get stored in text train which can be appertained subsequently as a note for instructors as well the people who have difficulty to use their hands or deaf.

Keywords –Automated word, Audio recording.

I. INTRODUCTION

Today, we will document our focus on using technology in each activity. In some companies or organizations, every action taken must be verified and appropriate. As in the case of the University of Medan in Indonesia, the university still operates a system for manually authenticating meeting materials using a set of meeting minutes. So, deliver a message to the alumni members who constantly commit crimes and could not attend the reunion. A computerized information system (CI) is a prerequisite for any private or public association to support the association's internal processes. IS, which can generate information quickly and directly, is essential for any association. Therefore, many things in the workplace, such as seminaries, universities, supermarkets, corporations, and government agencies, are very important SIs. SIs can help categorize and log messages. Words are the most natural way people communicate with each other. Discussion text-to-speech (STT) systems offer many benefits the hearing impaired. Speech understanding the capability restate a dictation or spoken word textbook. Speech detection, often called as "automatic Speech Detection" (ASR), or speech textbook (STT). Speech recognition the process for interpreting a set of words from an audial signal captured by a microphone or other external device. We can employ verbal processing for understanding interactions. The revered words could be used as a means to an end.

II. RELATED WORKS

Automated Notes Creator program which allows transcription by voice of text and human control of computer operations. With the use of a microphone, Speech recognition technology allows a computer to record what a person is saying. These words are identified by a voice recognition program, which then displays the words that were identified. The method of turning aural information that has been collected by a microphone or other external device into a group of words is called voice recognition. Language processing can be used to understand speech. Some examples and related work of Automated Notes Maker are:

F. Seide [2] This paper we referred demonstrates Context-Dependent Deep Learning Neural Networks. Blend traditional artificial neural network with context-dependent audio modelling and deep belief network pre-training.

Muhammad Yasir [3] This paper claims that every company, both private and public, needs computer-based information systems (SI) to support internal organizational operations. Every organization needs an SI able to giving information in a way that

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Mature Extension Using Deep Learning

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Abstract
A variety of computer vision applications use skin color detection, such as detecting faces, recognizing nudity, detecting hand gestures, and identifying people. This project proposes an image classification model for detecting daunting images on the internet. An image is identified and classified accurately using a convolution neural network (CNN). The proposed model is based on TensorFlow, a free and open-source software library for machine learning and AI that offers various APIs (in Keras) that allow us to build our models. It also enables us to add libraries. The model's input data is comprised of images gathered online from various sources. When enabled, our model will be implemented as a web browser extension and will run on all websites. The model's output is blurring the images and deactivating the links. The extension's job is to scan entire web pages and detect any frightening images that may be present. The intimidating images will be blurred before the images on the webpage load.

Keywords: *Extension, Blur images, CNN, Deep learning, Image recognition*

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I. INTRODUCTION

Social media and online browsing are now integral parts of our lives. Even children spend the majority of their mobile time browsing information or finding entertainment on various social media platforms and websites, with adults spending the majority of their time on mobile. The increased use of technology has an impact on our social interactions and mental health, both positively and negatively. It keeps us in touch with friends and family, but it can also cause feelings of loneliness and addiction. The Internet has become a most important medium for advertisements of the product as it is growing enormously. While browsing it is possible that one can come across advertisements that contain daunting images or links. And this advertisement is not an appropriate knowledge exposure, especially for children.

Skin detection is an interesting image-processing challenge and a key pre-processing step for subsequent methods (e.g. objectionable image detection, face detection, etc). Skin color recognition serves as the first step in this model. The most effective and reliable indicator of skin is color. Skin pattern processing is made quick by using skin detection. A precise face detection system can be created using additional cues like size, shape, and geometry. The range of skin colors caused by different ethnicities, variations in lighting, differences in photos taken using a variety of cameras with their characteristics, and other variations make skin detection very difficult. Another problem is that human skin and non-human skin share a lot of similarities The majority of the time, the literature's mention of skin detection techniques is used as a pre-processing step before face tracking and detection systems are applied. Accuracy may need to be sacrificed when the skin detection technique is only used as a pre-processing step in face detection, especially in real-time applications. To identify and analyze the image, the proposed model uses classification based on CNN, which uses curves, edges, and other features. Both non-bare and bare images are used to train our model. The system will enable child-safe internet browsing without parental involvement. so that parents won't have to worry about their kids encountering bare images at such a young age and not understanding what they mean. In other words, it will keep an eye on every page, filter out all the images, hide their details from kids, and prevent them from activating with a single click.

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GRAPHICAL PASSWORD AUTHENTICATION USING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

The graphical password systems, a replacement for the conventional alphanumeric username and password authentication mechanism, are the subject of this article. The latter has been shown to have serious disadvantages, such as users' propensity to select simple passwords or forget difficult ones. Images are used as passwords in graphic password systems, and this page gives a thorough description of the approaches currently being used in this field. The methods are divided into two groups: approaches based on detection and those based on memory. Further research directions are given along with discussions of the benefits and drawbacks of each technique. As well as discussing the key problems with the design and implementation of graphical password systems, the article discusses the security of graphical passwords in comparison to text passwords. Researchers and information security experts interested in investigating password-based authentication solutions should find this study informative. The Keyed Click Point (CCP) graphical password system, which requires the user to interact with a series of five images by clicking on specified locations, is the subject of the article. This system's objective is to increase security while utilizing a straightforward, strategy that is hard for hackers to figure out. New technologies like email and mobile phones are linked to the CCP.

I. INTRODUCTION

Web authentication at first only used text passwords. The fact that this system was insecure and simple to hack, however, made it troublesome. Users also had to remember numerous passwords, which was a difficult chore. Biometric authentication, QR codes, and mobile two-step verification technologies were introduced to address the shortcomings of the text password approach. These substitutes, however, were costly and sparsely accessible. Graphical password authentication systems were developed to solve these problems. These systems employ photos, which the user chooses via a graphical user interface and arranges in a particular arrangement. The "hot spot" issue was one of the issues with the first graphical password systems. The Pass Point method, which requires the user to click on five dots on a single image in a certain order to establish a password, was developed to address this problem. Users will find this system to be secure and simple to remember. In general, graphical password systems offer a more advantageous substitute for text passwords and conventional authentication methods.

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STUDENT PERFORMANCE PREDICTION

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ABSTRACT

It is important to recognize that student performance is influenced by a variety of complex and correlated factors. Technology advancements in educational displacement have limitless potential. The use of analytics and data mining to predict students' academic achievement and performance is one of these advantages. Machine Learning approaches such as ANN can be improved continuously based on existing literature. The purpose of this study is to examine and survey the current literature concerning Artificial Neural Network methods used in predicting student's academic performance. Furthermore, this project aims to capture a pattern of most commonly used Artificial NN algorithms and techniques. It is noteworthy that most of the articles reviewed are focused on higher education. Results showed that when evaluating academic achievement, ANNs are almost always used in conjunction with data analytics and data mining techniques, enabling studies to gauge the usefulness of their conclusions. It was not possible to detect a pattern regarding the selection of input variables since they are determined mainly by the availability of data and the context of it.

I. INTRODUCTION

Different educational institutions are set up to offer high-quality education that can alter the consciousness levels of people, mental ability and knowledge. Educators and Teachers are constantly working to raise students' success and also keep an eye on their performance to gauge how effectively they are teaching. Due to recent technological advancements, educators can now look through large datasets for similar patterns that represent their student behaviour and learning style using analytics and data mining methodologies. Despite the importance of student performance to the learning process, it is a complex phenomenon that is affected by different elements, not excluding the classroom environment and personal study habits. To create models that are able to predict a student's performance at secondary school or various levels of education, various studies have been known to use a variety of indicators.

II. REQUIREMENTS

Software Requirements:

VS code :-

VS code is a lightning fast source code editor that is used to develop anything from a website to a web app. VS code gives us the ability to complete the entire development cycle of our project in one place. For example, we can test, debug, edit, version control and deploy to the cloud.

Python :-

Python is an interpreted, high level object oriented programming language with dynamic semantics. It has an explicit and minimalist design that makes coding easy to understand and easy to write and predict. Guido van

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GEO LOCATION BASED NECESITY DONATION

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Abstract*: Food, Cloths, Books, Utensils are the first of all essential requirements, following food, shelter, and clothing, that pertain to people. It is significant because it sustains human existence by nourishing the body. But, as this nation's population and development continue to grow, these reusable waste has climbed day by day. There are lots of folks that want to provide reusable things to those in need, but they are unsure of how they may go about doing it. Our application focuses on connecting those in need with resources NGO's and average citizens. The donors will be able to see a variety of options for making donations. Through our application, the NGOs will receive information about the individuals wishing to donate, and a network between donors, those who assist donors in making donations (NGOs), and the actual needy individuals to whom donations are made will be created to thing sent is a donation. Our application seeks to improve the donation process transparency, clarity, and speed in order to lessen existing problems whenever it is possible to do so. With the help of this application, we will donate clothing, books, and leftovers to the poorest residents of India middle class, from the wealthy to the impoverished, and those that need These foods to satisfy their empty stomachs, clothes to wear, and books to educate themselves are included. We have chosen to pursue this project, also known as, in order to put our creative ideas into practise "Geo location based necessity Giving App". Food wastage in densely populated nations like India is a concerning problem. Weddings, canteens, dining establishments, social gatherings, and other events use up a lot of food. Food waste is a sign of numerous economic issues in addition to hunger or environmental degradation. due to abrupt changes in lifestyle and habits. We can put these goods to use by giving them to someone in need rather than wasting them. This project is a mobile app for Android with an emphasis on charity donations. This project's primary goal is to contribute to the reduction of social and economic problems. This will assist in reducing food waste and supplying other necessities for those in need, such as clothing, books, blood, etc. This helps both the needy and the eateries (by lowering waste and carbon emissions).

***Keywords*: Donor, Volunteer, Food Donation, Waste Food, Firebase**

I. Introduction

Our research into Android application development was done to combat the lack of access to inexpensive food that causes food insecurity. Making a significant contribution to several fields also enhances one's social standing. This software aids in the collection of discarded food and clothing from eateries and individuals, which are then given to those in need. Contributions are gathered from users at the proper times and places. According to their free time and goodwill, volunteers can use the app to deliver food or clothing to the needy. If donations could be made with a few taps on their Android phones and items were picked up at their doors at the appropriate times, that would be very practical and helpful. In India, 27.5% of people lack access to food and are unsure of where their next meal will come from. By way of "Geo Location Based Necessity Giving food or clothing to the poor has never been simpler thanks to the donation app. This app offers a wide range of features. The participating donors and charitable institutions are organised into groups according to a development wheel that points towards the nation's social standing. For donors, downloading the app allows them to choose the items they want to donate, including food, clothing, blood, and books. They can also enter their address and a convenient time for the volunteer to visit. Finally, posting a donation in the app will alert the NGO that is close to the donor's location. Restaurants can benefit from this app that is willing to donate extra food and other items by managing a "goodwill" points system for people and businesses. This device alleviates hunger and food waste in communities in need. Thus, a mobile application that allows users to donate goods in accordance with their means will be helpful in bridging the gap between donors and NGOs.

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Docteria-Your Health Buddy!

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***Abstract*: Both for personal use by patients and for professional usage, the market for medical apps is quickly growing. There are many medical apps, but it is uncommon to find pertinent information about their drawbacks and risks. One-half of the eight medical apps evaluated in a model study that found data integrity deficiencies also had security and privacy problems. Standard users typically lack the tools, expertise, and time necessary for such studies before entrusting them with personal data, therefore in an ideal world, manufacturers would disclose information about the capabilities and restrictions of their products. Issues with data management, data protection, and privacy should all be covered in the mandatory information. A standardised reporting tool in the form of an app synopsis could be useful for delivering the necessary information and all the fundamental needs in order to promote transparency. A standardised reporting mechanism in the form of an app synopsis might be useful for giving the necessary information and all the fundamental requirements for the app are met in our app, which would boost transparency. As a result, our app offers complete security and integrity while also meeting user needs.**

***Keywords:* security, integrity, and satisfies the user need.**

INTRODUCTION

Docteria—Your Health Buddy! is a medical app that helps connect the patient with the doctor via a virtual interface. It is an app that recommends the user according to the user's needs. The user gets the recommendations of the doctors according to the disease mentioned, the user's liking, and the doctor whose best suited to the user. The recommendations are done with the help of AI and machine learning. As a result, our app will benefit society in a variety of ways. In situations like COVID, the Docteria-Medic app can be very useful. We can face situations like COVID very easily in the future. With the help of our app, the user can be treated at his or her house. Getting proper treatment at home was the main task during colonial times; thus, our app is the solution to this major issue. Also, the user who is not comfortable speaking openly about their disease can get proper treatment with proper maintenance of confidentiality.. Docteria—Your Health Buddy! is a medical app that helps connect the patient with the doctor via a virtual interface. It is an app that recommends the user according to the user's needs. The user gets the recommendations of the doctors according to the disease mentioned, the user's liking, and the doctor whose best suited to the user. The recommendations are done with the help of AI and machine learning. As a result, our app will benefit society in a variety of ways. In situations like COVID, the Docteria-Medic app can be very useful. We can face situations like COVID very easily in the future. With the help of our app, the user can be treated at his or her house. Getting proper treatment at home was the main task during colonial times; thus, our app is the solution to this major issue. Also, the user who is not comfortable speaking openly about their disease can get proper treatment with proper maintenance of confidentiality.

I.SCOPE

The Docteria-Medic app is integrated with the user's smart watch, allowing the doctors to monitor the user's activity around-the-clock using the smart watch. The doctor can give the patient greater care because he can continuously watch over the user's activity. As a result, our app has several levels; the lowest level will gain access to recommendations from a doctor and live chat with the doctor. With IOT devices, the top level will have access to doctor consultations around-the-clock (smart watches, etc.). An ambulance may be sent to the patient's location if the doctor thinks there is an emergency. For users of our app who suffer from illnesses like Alzheimer's, etc., geofencing is provided. Maintaining the Integrity of the Specifications.

Application of Intelligent Recommendation for Agricultural Information- E-krishi

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Abstract

Artificial intelligence makes it possible for machine to learn from experience, adjust to new inputs and perform human like task. Agriculture is slowly becoming digital and artificial intelligence in farming provide crop and soil monitoring ,insect and plant detection etc. Several developing concerns exist in the Indian agricultural sector. From 1951 to 2023, agriculture's shareof the GDP in India fell steadily as the country's economy diversified and expanded. Although Indian agriculture has attained grain self-sufficiency, the production is resource demanding, cereal-centric, and biased towards certain regions. India's resource-intensive agricultural practices have also sparked severe sustainability concerns. Most of the time, there are lots of resources accessible to help farmers to thrive in their work, but there is a big knowledge gap between the farmers and those offered programs. In this paper we try solve those problems with the help of today's technology in various aspects.

Our paper is solely aimed at the development of farmers and agricultural businesses through smartphones, and it commits to make selling and buying agriculturally based products, simple and appropriate. The goal of this paper is to support farmers. Its goal is to provide farmers with profits. This application's central concept is an online auction. It enables farmers toget the greatest price for their crops. The app's user interface is straightforward, and it offers data on crucial issues including buying and selling crop seeds, weather forecasts, the detection of plant diseases, science and technology news, government initiatives, and AI-based chatbots.

Keywords : Krishi, Agriculture, Android, Marketplace, Chatbot .

I. INTRODUCTION

India's economy is heavily dependent on agriculture; in other words, farmers are India's backbone. Agriculture development has a significant impact on India's economic well-being. The technology of agriculture has advanced greatly throughout the world, but in India, the majority of farmers are utterly ignorant of the prices at which their products are sold. Due to a lack of knowledge about the true prices of the items, farmers frequently struggle to achieve the right price for their commodities and struggle to sell their goods on time, which causes them to lose a lot of money. To sell their goods in the market, farmers enlist the aid of middlemen. Because of the involvement of the middlemen, the farmers do not receive adequate compensation for their output. Farmers lose a large portion of their income due to the involvement of the intermediaries. This results in significantlosses for the farmers while benefiting the intermediary. A new mobile app " E-Krishi "will prove helpful for farmers in this regard. In our system overcome the problems. The solution provided by our implemented system are listed below Chatbot with interactive nature where user can ask their queries or information they needed and we provide them solution as a result. Weather forecast that provides current weather information on time. Information about Inventory of food grain. Also we are providing the flexibility that the farmer can edit their profile and can edit the quality of products and provide the description about the product. Plant disease prediction is the feature that we have added into a implemented system where farmer can scan the image of bad plant or

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Map-Based Attendance Monitoring System

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Abstract - *It is thought to be inefficient to take attendance the old-fashioned way, where a lecturer calls out each student's name and logs attendance. To overcome this issue, the proposed system integrates geolocation, GPS, and OTP technology to provide a more efficient and secure attendance monitoring system. Geolocation and GPS technology are used to verify the user's location, ensuring that the student is present in the classroom or lecture hall. The integration of geolocation, GPS, and OTP technology ensures that attendance records are accurate and reliable, while also providing an added layer of security to prevent proxy attendance. The OTP is dictated by Faculty to the students. It is used for Two-Factor Authentication. This system has the potential to revolutionize the way attendance is managed in educational institutions and provide significant benefits to both students and faculty. The system also provides real-time monitoring of attendance, allowing instructors and administrators to track attendance data and generate reports on attendance trends. This can be useful in identifying students who may be struggling academically or are frequently absent.*

Key Words: OTP Authentication, GPS tracking, Attendance monitoring, Google Sheets, Geolocation,etc

1.INTRODUCTION

Today's technological advancements are moving closer to the field of education. The use of sustainable technology for effective learning and the delivery of high-quality education has reached its peak. Nowadays, nearly all businesses and educational institutions place a great emphasis on attendance management. The two most prevalent types of attendance systems are automatic and manual. Manual methods involve paper and a pen. The paper sheets used in traditional techniques could be lost or damaged, making them unreliable. Additionally, extracting significant information takes a lot of effort. Instead of paper, attendance systems and automated time call for the use of Digital tags, barcode stickers, and biometrics. Here's how to utilize GPS on your smartphone to monitor attendance and time. We have and the expense of installing extra devices are reduced. Students use mobile devices and apps that are automatically tracked. OTPs can be created, the teacher physically dictates his or her OTP, and the educator selects a class to attend. Our system will help to keep track of student's attendance in the classroom. The OTP must be entered by the student. The data can be even exported in spreadsheet format and offers a customized view of student attendance records.

2. LITERATURE SURVEY

[1] Location-Based Smart Attendance System Using GPS

Using phones and an Android mobile application, a location-based time and attendance tracking system eliminate the need for additional biometric scanner devices. Items of the organization include a particular spot, which may be located using GPS. [1] The GPS on smartphones determines where each pupil is. In our work, we define this place as a key to some time and attendance tracking.

[2] A Smart, Location-Based Time and Attendance Tracking System Using Android Application

In this research paper, the smart location-based attendance and time monitoring system used in this research article is built on Android mobile applications for smartphones, which eliminates the requirement for extra biometric scanning equipment.[2]The GPS can be used to locate an organization's position, which is specific. A smartphone's GPS can be used to find each employee's position. In our paper, we define this place as a key to time and attendance tracking.

[3] Automated Student Attendance System using Fingerprint Recognition.

In this project, the detailed method is used to develop an identification system that is easier to install than any other now available. The proposed automated attendance system based on fingerprint identification achieved noteworthy results for tracking the attendance of the

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Smishing Detection

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Abstract— ***These days, everyone has a smartphone with basic features like messaging and calling. The frequent ringing of smartphones from spam calls is already famous for its fraudulent or commercial pitches to unsuspecting consumers. A sizable portion of these spam calls has switched to messaging due to network operators' lower-cost bulk messaging services. Short Message Service, or SMS, has developed into a hub for spam product descriptions and fake offers. This is where classification is required in this situation. In this context, classification refers to the process of separating spam messages from valid or invalid messages. Using a dataset from the UCI repository, we applied APPLICATION Programming Interface for live analysis of spam detection of message. At the conclusion, we compared the accuracy results, which indicated the best model.***

INTRODUCTION

SMS Spam Detection is a common issue worldwide, and as text message usage increases, the issue is progressively getting worse. The Google Play Store offers a variety of android based apps for handling spam communication. In addition to this applications, there are several spam filtering techniques available in the literature currently in publication. The majority of them are really helpful for figuring out whether an SMS is spam or not. With the widespread use of mobile phones, SMS spam detection has become on of the oldest problems and a significant one. Because there is room for improvement within the existing framework, researchers are refocusing on the theory.

SCOPE

A significant problem is the accurate identification of spam, and numerous detection techniques have been put forth by various researchers. These techniques can't however, properly and effectively detect spam we have suggested a technique for spam identification using machine learning models to address this problem. The technique is used in order to identify spam. Accordingly the findings imply that the suggested method is more trustworthy for the precise and prompt detection of spam. It will also secure messaging systems and perform assessments.

PROBLEM STATEMEN

The spam filtering system and spammers are in a fierce rivalry every day as spammers started employing cunning tactics to get through the spam filters, such as utilizing random sender addresses or attaching arbitrary characters to the beginning or end of mail subject lines. This paragraph introduces the issue, the impact spam is having on online communities, the harm it causes, as well as the challenges that face current filters in their efforts to effectively detect the presence of spam.

EXISTING SYSTEM

Their research focused on eliminating spam in order to make communication systems secure. Using the same dataset as this paper, LR was able to reach an exceptional accuracy of 99% in this case. Despite the fact that the Decision Tree Method also achieved an accuracy of 98%. The researchers noted that approach required substantial amount of processing time. By using deep learning techniques for more precise message filters and higher accuracy, which challenged the usage of machine learning algorithms. The article use Long short term memory(LSTM) and Convolution neural network(CNN) models specifically to obtain superior accuracy of 99.44%. The greatest performance was achieved using a CNN-based model using data from 10-fold cross-validation

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"Mudra" (for Specially Challenged People Using CNN & Text To Speech Algorithm)

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I. ABSTRACT

One of the non-verbal communication techniques utilized in sign language is the hand gesture. Deaf persons who struggle with speech or hearing most frequently use it to converse with each other and hearing people. Several makers around the world have created various sign language systems, but they are neither adaptable nor cost-effective for end users. The majority of programs only provide text-based results. So, we are going to offer a system prototype in an application that solves the aforementioned issue. Hand gestures can be translated into text and then spoken by the system. Several algorithms will be used by the system, including CNN for classifying hand movements and SVM for detection of hand movement & TTS for conversion of Text To Speech.

II. INTRODUCTION

The increase in general acceptance and funding of international projects emphasizes the need for sign language. In this day and age of deaf technology, it's important to want a computerized solution. However, researchers have been working on the issue for a while, and the outcomes are encouraging. While there are intriguing voice recognition technologies available, there are no commercial character recognition solutions available at this time. The objective is to create a Human Computer Interface (HCI) that can comprehend human speech. Teaching computers to recognize speech, facial expressions, and human gestures is one step toward this objective. Information is conveyed nonverbally through gesturing. Gesture recognition is an aspect of human-computer interaction that demonstrates an academic thesis. It is essential for popularizing the idea of human connection, an open dialogue that must include user-machine correlation. Motion investigation is a discipline that can perceive signals, for example, hand, arm, head and, surprisingly, primary developments that normally include a specific stance or potentially development. A person can send more information in less time by using hand gestures. Computer vision concepts have been applied to the real-time processing of gesture outputs in a number of different ways.

III. REQUIREMENTS

1. Software Requirements

- Operating System: Windows 10 or Later
- Android Studio With JAVA
- Programming language : Python for machine learning.

2. Hardware Requirements

- Processor: Intel core i5 – 10th gen
- GPU : GFX cuda tool
- SSD: 500 GB
- RAM: 16GB

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Students Attendance Tracker Parents using Machine Learning

D.Y.Chirayil*, B.K. Sarkar

Keywords: automated, management, system development, Students, Attendance, Tracker, Teachers, Parents, Machine Learning.

Abstract

Our Exploration is a Mechanized Participation The executives and Ready Framework (AAMAS)* was made to help UiTM teachers and Scholarly Undertakings Division in really taking a look at students' non-participation and dealing with the non-appearance with recording the board. AAMAS gives various limits, from directing and recording students' investment record, to sending modified alerts to students with high delinquency through short illuminating structure (SMS) and email. The structure is moreover prepared to follow the amount of alerts sent. Through AAMAS, a ton of time and money can be saved, for instance time expected to wrap up designs and issue cautioning letters genuinely can be restricted on a very basic level. What's more, message catch, HR and human missteps can similarly be diminished. AAMAS which was redone to UiTM could be similarly improved and uniquely created to cook other learning associations' requirements generally through Malaysia.

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Section
Articles

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Tourist Behaviour Analysis Algorithm using Machine Learning and AI

D.Y.Chirayil*, B.K. Sarkar

Keywords: Tourist, Behaviour, Analysis, Managements, Algorithm, Machine, Learning

Abstract

Our Creation "is the quantity of occupants in bloggers who report their experiences may not be illustrative of the quantity of occupants in all visitors. Realistic implications - Blog-journal stories allow the opportunity to accumulate emic interpretative data straightforwardly. These records might conceivably affect impressive amounts of future visitors who go internet searching for first-individual unprejudiced, unrehearsed reports of others' goal experiences. First-individual (emic) reports engage heads of spots (brands) to learn and talk in tongues of clients. Through examination of online purchaser stories about their development experiences. this paper tests how visitors translate their experiences while visiting metropolitan regions in Asia. Taking apart texts made by customers through Heider's balance speculation gives the method for examination to trial of both positive and negative travel experiences of new visitors. A through and through examination of traveler image of an area helps in giving significant information to making decisions about area publicizing. If travelers have

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Air Quality Sensors and voice alert using IOT and Deep Learning

Reena Singh,Prof. Manisha Amol Bhendale,Prof. (Dr.) B.K. Sarkar
DOI: 10.14704/NQ.2022.20.15.NQ88011

Abstract

Great nature of air is expected to keep up with great ailments among the living climate. Dangerous gases and air contamination can be recognized in encompassing regions. Boundary like IAQI is estimated from the proposed framework gives a productive method of discovery of air quality. Proposed framework has ESP8266 for associating with IOT stage to pass the data in regards to the contaminations to the faculty. Taking care of oneself is improved by the approach to distinguishing the poisons of the climate. Air contamination happens when the ecological gases, for example, CO2, NH3 and so on focus levels go over the ideal level. As the AQI is being determined and according to the Focal Contamination Control Board (CPCB), there is standard degree of reaches for contamination level. This paper presents about checking the contamination level utilizing Raspberry Pi 3 in view of IoT innovation. Here, the temperature, moistness, due point and wind speed boundaries are additionally checked and utilization of these boundaries as informational collections for expectation of contamination anticipating. Then, the objective of this undertaking is applying the profound learning idea for the expectation and examination of gas sensors contamination level with the goal that we can break down the contamination level because of the toxin gases in view of forecast examination. Different examinations being performed approval of the advancement of the framework for constant observing. Here, we are examining about the various techniques utilized in profound learning for example Fake Brain Organizations (ANN), Multi-facet Perceptron (MLP) and Repetitive Brain Organizations (RNN) utilizing LSTM model to dissect and anticipate the multivariate time series guaging

Keywords
Air pollution, IOT, Monitoring system, Air quality, Gas sensors,ESP8266, connecting,Central Pollution Control Board

Geotechnical Characterization of Soil Slopes a Tool in Determining

Dr. Ravindra D Nalawade, Prof. (Dr.) Reena Singh, Prof. (Dr.) B.K. Sarkar

Keywords: Geotechnical, Characterization, Soil Slopes, Tool, Determining, RGDS approach

Abstract

Planning the math of soil slant is a powerful treatment for forestalling slant disappointment. The most effective method to manage the vulnerabilities engaged with soil boundaries in geotechnical configuration is a primary worry of geotechnical engineers. In this review, a vigorous geotechnical plan for soil slants (RGDS) approach was proposed, in which the Vulnerability Hypothesis was acquainted with depict unequivocally the vulnerabilities engaged with soil boundaries. The unsure unwavering quality is frequently used to depict the gamble of slant disappointment. The plan strength depicting the harshness between the variety in the framework reaction and the variety of information dubious soil boundaries was assessed by the sign to-commotion proportion. The targets of this plan are to augment the plan strength, limit the unearthing cost, and assurance the security (expand the questionable dependability). Consequently, the RGDS was figured out as a multiobjective enhancement, and the ideal plan can be resolved in light of the ideas of Pareto front and knee point. The proposed RGDS approach was represented through a

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Risk Assessment and Challenges Faced in Repairs and Rehabilitation of Dilapidated Buildings

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Dilapidation;
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Hygienic factors;
Safety factors.

ABSTRACT

The use of concrete as parent material is now an old technique, but it is widely used today due to its unique characteristics. India has witnessed development in the construction field from Harappa civilization to the British era for many years. Even after independence, in 1947, India has advanced in construction techniques in concerning time. However, improper management, design, and ignorance of repairs and rehabilitation of structure cause the collapse of buildings which causes many deaths to occur every year in Mumbai and throughout the country. But the people living in dilapidated buildings risk their lives. Many people are constrained to live in them due to various reasons like skyrocketing rise in real estate prices, fear of losing their houses after vacating for redevelopment projects. Repair and rehabilitation are significant for preserving the structure's capacity and increasing its performance capacity, which deteriorates due to aging factors, environmental factors. The recent collapse of the building named Tarique Garden in Mahad caused the deaths of 20 people. Considering this as a manufactured disaster, it made a national highlight seeking the attention of mainstream media. A sample space of buildings from buildings in khed city, about 200 km from Mumbai, is taken as a research area as this is a developing city near Mahad city where the incident occurred. This paper aims to determine the various risks involved in dilapidated buildings by studying various health and safety factors that affect the age of the building. This research also focuses on scrutinizing various problems faced by the residing people in dilapidated buildings. The methodology adopted in this research is by doing unstructured interviews with a questionnaire survey of tenants, performing field surveys of various structures in the study area, and segregating the buildings based on the building's various safety and hygienic conditions. The result shows the DI (Dilapidation index) score, which is done based on the comfort level of tenants. Finally, this research signifies accomplishing various action plans taken by government authorities towards dilapidated buildings and proposing some suggestive measures that would help minimize such accidents.

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Review Paper for floodplain mapping with applications of HEC-HMS, HEC-RAS and ArcGIS softwares – A Remote Sensing and GIS Approach

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[1,2,3] Associate Professor, [4] Professor, [5,6] Post Graduate Diploma Student.
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[4,5,6] Department of Geography, Shivaji University, Kolhapur

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Abstract - *Floods have proven to be a serious disaster on a worldwide scale over time. Floodplain mapping is one of the key acts that must be conducted in order to determine, decide, and take action for flood risk management, given the significance and gravity of the effects of floods. This paper looks at the same subject from a geoinformatics perspective, using GIS software. GIS tools such as HEC-RAS, HEC-HMS, ArcGIS, and others are used to define floodplains. Many scholars have worked on this topic previously, and there is a wealth of information available. However, a new user learning the material for the first time may find things difficult and complex. There are many floodplain mapping approaches accessible, which may make it difficult for a new user to choose one for his own task. This paper attempts to assist a new user by categorizing previously examined studies (2000-2021) into three categories: Flood Frequency Analysis Methods, Digital Elevation Models (DEMs), and Softwares used.*

Key Words: **Floodplain mapping, Software, Hec-HMS, Hec-RAS, ArcGIS, Remote Sensing**

1. INTRODUCTION

For a long time, India has been plagued by natural disasters. Floods, on the other hand, have become more common in recent years. These floods have wreaked havoc on people's lives and property. Hyderabad (2000), Ahmedabad (2001), Delhi (2002, 2003), Chennai (2004), Mumbai (2005), Surat (2006), Kolkata (2007), Jamshedpur (2008), Delhi (2009), Guwahati and Delhi (2010), Kedarnath (2013), Srinagar (2014), Gujarat, Chennai (2015), Assam, Hyderabad (2016), Gujarat (2017), Kerala (2018), Kerala, Madhya Pradesh, Karnataka, Maharashtra, Gujarat (all 2019), Assam, Hyderabad (2020) and the recent ones of Uttarakhand and Maharashtra- Mahad and Chiplun (2021) were the worst floods in the recent two decades. The regular occurrence of floods necessitated a thorough examination of the subject and the development of a solution to the challenges encountered. Floodplain mapping was one such solution. Floodplain mapping is a technique for identifying areas that are prone to recurring flooding from nearby rivers, lakes, streams, and the sea, as well as providing information on the spatial distribution of flood construction levels.For many years, numerous researchers have studied floodplain mapping. It has lately been coupled with tools like HEC-RAS and ArcGIS to conduct more in-depth research on the subject.

However, a user may be unsure about which technique to employ and how to apply it when pursuing a study in the subject for the first time. After reviewing prior research on floodplain mapping by a lot of scholars, this work has compiled and classified a few studies based on the methodology employed and presented them in a clear manner.

2. LITERATURE REVIEW

Numerous research papers in the last two decades were dedicated to the topic of floodplain mapping. The topic and its study however, became advanced with the time and the use of softwares facilitated the study of floodplain mapping. This paper tries to focus on the parameters of software, Digital Elevation Model (DEM) and Flood Frequency Analysis methods that have been majorly used to study floodplain mapping. Following is a brief look at the research papers that were studied:

2.1 Methods of Analysis

2.2 Digital Elevation Model

2.3 Softwares.

2.1 Methods of Analysis

The Normal Distribution, Gumbel Distribution, Log Pearson Type III, and Extreme Distribution methods are

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Research JoWREM

Validating the Gravity Recovery and Climate Experiment (GRACE) Terrestrial Water Storage Dataset using Terra MODIS NDVI Anomaly

Sachin Bhere[1,*], Shweta Panaskar[2], Raju Narwade[3], Karthik Nagarajan[3]

Abstract

The Gravity Recovery and Climate Experiment (GRACE) is the advance tool for mapping the changes in the gravitation field of the earth. The satellite launches in 2002 and the follow off mission is in 2016. The gravitational changes of the earth are downscaled into the changes in the mass with the different algorithm by three institutions. Further the mass anomaly is converted into the equivalent water thickness of the terrestrial water storage which comprises of different water component which can be used and modelled for different application. The objective of this paper is to validate the GRACE data for soil moisture and land use analysis using MODIS NDVI anomaly. For calculating NDVI index Moderate resolution imaging spectroradiometer (MODIS) vegetation index product is used. NDVI is used to determine the condition of healthy vegetation. It ranges from -1 to 1. These values represent the health of vegetation. Values near one represent the healthy vegetation. It is calculated by taking ratios of spectral reflectance of NIR and Red spectrum of electromagnetic wave. The study shows the GRACE includes all aspects of water storage deficit including groundwater and soil moisture which important for region like Western Ghat as many farmers depends on ground water resources like well and borewells. NDVI sometimes fails to show the monsoon drought condition but it can be used to for characterization of post monsoon condition as it shows the vegetation health index. The study significant correlation with GRACE and NDVI, one should adopt these indices for characterization of Vegetation, soil moisture and canopy cover.

Keywords: GRACE, NDVI, Western Ghat, Terra MODIS-NDVI product, LULC, Soil Moisture

INTRODUCTION

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Healthy vegetation and crops can be judged by satellite-based vegetation index for the signature of droughts on crops as it gives the spectral reflectance ratio between Near Infrared and Red spectrum of electromagnetic wave [3, 10] studied relative greenness as the percent value of a pixel with reference of average historical greenness of pixel. Drought characteristic can be studied by Normalized Difference Vegetation Index (NDVI) based index as the deviation from mean as the reference of the standard deviation of a pixel for the selective period [13].

Gravity Recovery and Climate Experiment (GRACE) was launched by NASA and German Aerospace Center (DLR) for monitoring gravitational changes on earth with the help of K-

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ARTICLE (PEER REVIEWED)

Integrated Model and Index for Circular Economy in the Built Environment in the Indian Context

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Abstract

Sustainable development aims at minimising waste and reducing exploitation of natural resources and energy, so that needs of the future generations are taken care of. Circular Economy (CE) is a new drift towards sustainability that aims at minimising waste and promoting material reuse, thereby creating a regenerative system. The construction industry is responsible for the extraction of raw materials and generation of waste in large quantities, thereby making it an opportune sector for transition to a circular economy. On account of the complex nature of the built environment comprising various phases and associated actors, a proper framework or indexing for the circular economy is missing at present. This study aims to develop an integrated model of CE in the built environment which considers various construction stages and applicable strategies. An index for measuring the circularity potential in construction materials is also proposed, based on attributes developed from literature review and analysis of questionnaire survey. Simple Additive Weighting Method (SAWM), an elementary multi-criteria decision-making method is used for developing the index. It is anticipated that Circular Economy Potential Index (CEPI) would support decision-making in the initial stage of construction projects and help to compare the circularity of materials.

Keywords

Circular Economy; Recycling; Integrated Model; Index; Built Environment

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Earthquake Resistant Structure Using Base Isolation Technique

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[3,4]Assistant Professor, Dept. of Civil Engineering, Pillai HOC College of Engineering and Technology, Maharashtra,India

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Abstract - *Base isolation method is one of the passive seismic isolation systems commonly used in earthquake prone areas. Over the past several decades, base isolation has been considered for structures like buildings and bridges subjected to earthquake ground motion. The main application of base isolation system is to reduce base shear, displacement and increases the period of oscillation due to earthquake ground excitation. In this project, three-dimensional nonlinear analysis is performed on RC residential building. The design and analysis of building is done using computer program SAP 2000 v 16.0.0. The performance of the considered building with and without base isolator is studied. The main objective is to compare efficiency of fixed base and isolated base building. The laminated rubber bearings are used as a base isolation system.*

***Key Words*: Base isolation, Lead rubber bearing, Response spectrum method, Storey displacement, base shear, Storey drift.**

1. INTRODUCTION

Seismic base isolation is one of the most popular methods of protecting a structure against seismic forces. The seismic isolation can be implemented by means of ball bearings, spring systems, rubber bearings (Fig 1), friction bearings etc. The application of base isolation can increase the structure's seismic performance. The principle of base isolation explains it changes the response of the structure which allows moving the ground below the structure so that seismic ground motion is not allowed to reach the structure. The system can be defined as a flexible interface between foundation and structure to decouple horizontal motions of the ground from the horizontal motions of the structure. The isolators also possess inherent damping characteristics which will be added to overall damping of the structure. A considerable reduction in demand forces as well as in inter storey drifts is achieved. Base isolation system concept mainly focuses on the shift of structure's fundamental period out of dominant earthquake energy frequencies range and also increases energy absorbing capabilities. In this process, superstructure and the foundation are decoupled from strong motion horizontal components of ground motion because of which devastating strong motion signals are filtered out.

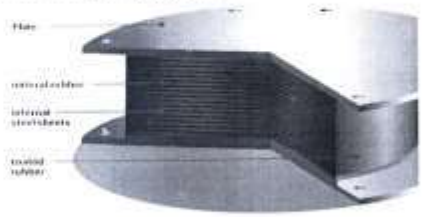

Fig -1: Elastomeric Bearing

1.1 Literature Review

James M. Kelly [1986] [3] described the theoretical aspects of seismic isolation and implementation of those isolation systems in structures. The paper describes the use of different base isolation systems including many modern approaches used in structures and characteristics of the implemented systems with an indication of their range of applicability. A review of all papers on the topic published from 1900 to 1984 has been included. In recent years many practical systems of seismic isolation have been developed and application of this technique for earthquake protection is tested.

Prashika Tamang et.al [2016] [5] adopted base isolation using lead rubber bearing at foundation for the protection of buildings from seismic vibration. The isolation system consists of alternative rubber layers which are bonded between thin steel plates to provide lateral flexibility. During the seismic event the rubber provides flexibility that allows it to move along the movement of the earthquake and slowly comes back to its original shape or position when the shaking is off. Steel which is bonded between the rubber layers holds the rubber in a vertical direction by providing stiffness.

Syed Ahmed Kabeer K I [2014] [6] performed analysis to check the adequacy of the base isolation against earthquake damage when compared to the conventional earthquake resistant design. A building was analysed using the equivalent lateral force method and response spectrum analysis as fixed base (FB) and as isolated base (IB) with lead rubber bearing. The analysis represented a case study for reinforced concrete to show the ultimate capacity of the

Seismic Fragility Analysis of Structures Containing Supplemental Damping System

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Abstract- The structural damage that happens during earthquakes explains the necessity for seismic evaluation, which is used to forecast the potential of structural damage. This paper compares the vulnerability of steel buildings with and without supplemental damping system. Fragility curves are used to describe the degree of vulnerability. Supplemental damping system is a new design and retrofit idea that deals with a well-designed damping system. It is an additional cable damping system that can considerably reduce the risk of damage. A combination of cables, fuse-bars, and dampers are used in the system. Dampers are used to protect buildings from earthquakes. It is proven that the main response would be considerably lessened. The damage will be concentrated on the system while the main structure will remain elastic or with minor inelastic deformation. A well designed fuse bar acts as a sacrificial element which will dissipate seismic energy by inelastic deformation and thus protects the structure by keeping it elastic. Therefore only the fuse can be replaced making the repair works much easier and economical. This methodology is used to design a nine storied steel building and is evaluated using linear and nonlinear analysis. The modeling, linear and nonlinear analysis is carried out using SAP 2000. The seismic performance of building models were analyzed using fragility curves.

Index Terms- Fragility Curves, Non Linear Analysis, Structural Fuse, Supplemental Damping System

I. Introduction

An earthquake can be powerful enough to demolish major structures and kill thousands of people. The only technique accessible to ancient architects to prevent seismic devastation was to construct iconic constructions that were abnormally rigid and robust. In earth quake engineering, there are now various design philosophies that use experimental results, computer simulations, and observations from previous earthquakes to provide the requisite performance for the seismic damage. The essential parts of earthquake-resistant structures, particularly their main elements, must be designed with ductility in mind. During an earthquake, such structures can swing back and forth and withstand the effects of the earthquake with significant damage but no collapse.. In addition to the ductile design philosophy another philosophy known as Damage Avoidance Design philosophy has been introduced to withstand major seismic event with minimal and repairable damage.

Supplementary Damping System

A Supplementary Damping System (SDS) provides extra damping to a structure's natural capacity to regulate motion. An SDS absorbs dynamic energy from a structure and decreases the effects of excessive motion in its most basic form. Structural vibrations can be caused by the wind, people, vehicles, mechanical equipment, and seismic activity. Damping is a low-cost solution to vibration problems. The fundamental principles of vibration apply to all forms of damping systems, despite the fact that there are many different varieties. Structures with asymmetric designs, which are known to be more vulnerable to earthquake damage than symmetric-plan buildings, might benefit from additional dampening. Mechanical devices are built into the building's frame and dissipate energy over the length of the structure. Mild steel yielding, sliding friction, piston motion inside a viscous fluid, fluid orificing, or viscoelastic action in rubber-like materials are all ways for dissipation of energy. Supplemental damping devices dissipate earthquake-induced energy in parallel or in sequence with the main structural system. As a result, energy dissipation demands on main structural elements are lowered (or eliminated), resulting in fewer irreversible deformations and damage to structural and non-structural components.

Benefits

a) Occupant comfort and safety standards are met.
b) A longer design life (structural durability) is achieved by reducing structural stress and/or fatigue.
c) Costs of construction and upkeep are lower.
d) More space for tenants.

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Structural and Non-Structural Flood Mitigation Techniques for Ulhas River in Badlapur Region, Thane

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[3]*Junior Engineer at Kshitij Construction.*
[4]*Professor, Dept. of Civil Engineering, Pillai HOC College of Engineering & Technology, Maharashtra, India.*

Abstract – *Flooding remains the most common and one of the disastrous categories of natural hazards. Flood protection is one among the sensible methods in damage reduction. It is impossible to be completely shielded from flood disaster but major a part of damages are often reduced by mitigation techniques. This project depicts the optimum flood mitigation plan determined by risk analysis by accepting possibilities of flood overtopping. Remote Sensing and Geographical Information Systems has been applied within the mapping of flood risk areas to assist be prepared and to strengthen local infrastructure. The main aim of the study is flood risk mapping in Badlapur area with respect to the physical, demo-graphical and socio- economical vulnerability indicators. With the major river Ulhas flowing along the region and rapid growth of urban areas there have been many indicators of risk which was analysed in this paper. We review flood hazard mitigation policy, describe a number of the environmental damage related to current policies, and review current policy proposals to stipulate ways to mitigate the flood hazard without promoting catastrophic losses and environmental damage.*

Key Words: Flood disaster, Mitigation techniques, Flood risk analysis, Risk mapping, Structural & Non-structural.

1. INTRODUCTION

A case study of Ulhas river catchment in Badlapur region of Thane has been chosen as it covered wider aspects and complexities related to urban flooding in the Indian environment. The study targets to integrate the flood management aspects with innovative methods and their application in the Indian scenario. The National Institute of Disaster Management (NIDM) report reveals negligence and gross lack of awareness on the part of the authorities support to manage the disaster under the preparation plans for the city, absence of a sustainable model of urban planning wherein the long-term objectives are replaced by short-term gains at the cost of the ecology and the demands of the majority population that relies in a deep way on them for their survival. (NDMA Government of India [2010], NDMA Guidelines: Management of Urban Flooding)[10] The weather in Badlapur region is warm and moderately humid tropical climate with maximum temperature of 41°C and minimum temperature of 17°C. The annual rainfall ranges between 1900 mm to 2700 mm. Due to heavy rainfall, runoff is increasedon the ground surface this creates a problem like economic losses, tangible losses, intangible losses.To avoid this loss it is necessary to mitigate such runoff which is causing a flood. By using traditional methods, floods should be mitigated but it can be found that it is not applicable for the urban areas. In most cities in India, the runoff from roads, buildings and other urban areas, is directed to conventional drains/ conveyance systems. During the rainy season, it can be found that these drainage systems are exceeded hence that causes floods. This research aims to study flood problems in complex urban areas. (Apte N Y [2009], Urban Floods in context of India)[1]

BASIC CONCEPTS AND LITERATURE SURVEY

Geographical Aspects: One such suburb that experienced huge spurts of growth is that the region of Badlapur under thane district. It lies on the central line of the railways. The Badlapur region lies along the 19° 10' 0.4224" north latitude and 73° 14' 12.4584" east longitude, Thane. the world has the Ulhas basin on the western and northern boundaries which has its origin at Tungarli near Lonavala descending at Bhor ghat meeting the ocean at the Vasai creek. The study area of the project is little 12 towns of Kulgaon-Badlapur Municipal Council (KBMC) in Thane district near mumbai city. KBMC in its jurisdiction has the planet of about 35.68 sq. Kms [(13.78 sq mile), elevation 44 m (144 ft)], which is split into 34 wards & 13 operating zones.

Climate And Rainfall: The weather in Badlapur region is warm and moderately humid tropical climate with maximum temperature of 41°C and minimum temperature of 17°C. The annual rainfall ranges between 1900 mm to 2700 mm. There are four seasons namely the winter (October- January), summer (February- May) and

ASSESSMENT OF LAKE EUTROPHICATION: A CASE STUDY IN KATTIGENAHALLI LAKE, BENGALURU

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ABSTRACT

The water quality of the lakes can be degraded due to the discharge of wastewater sources, such as municipal sewage agricultural runoff and industrial wastewater. This study summarizes the sources and the mechanisms that will leads to the eutrophication in lakes. The water quality analysis is carried out to determine the water quality index and trophic status index to evaluate the level of eutrophication of lake. Kattigenahalli lake located at Bengaluru, Karnataka was used as a case study. 10 sampling stations were identified and the samples were collected in all the sampling stations and the water quality parameters: Temperature, pH, EC and Dissolved oxygen were determined in the field and also water samples were carried to laboratory for analyzing remaining water quality parameters. The experimental data indicate that the Kattigenahalli lake is moderately polluted due to continuous discharge of the municipal wastewater from 3 inlet points and from the agricultural runoff. Based on the Carlson's TSI calculation the Kattigenahalli Lake has been classified as eutrophic. Thus certain precautionary and constructive steps are mandatory to avoid further eutrophication of lakes.

Keywords: *Water quality, river pollution control and remediation.*

Introduction

Water is one in all the foremost necessary natural resources on the market to humans. Knowing the worth of water. In nutritious health, the requirement to conserve water bodies particularly H_2O bodies still exists it was consummated within the whole world. International clean water isthat the foremost acceptable human resource and thus the world is called "Blue Planet" because water covers regarding seventy one percent of the surface, however majority of the water is salty. But 3 percent of water is clean and majority of the water isin ice caps, glaciers, and groundwater. Most of the remainder is the lakes, streams and soil wet. The world water state of affairs is minatory. Water quality is vital not just for drinking and domesticfunctions however conjointly for business, agriculture and commercial use. Water availableness is vital , considering the event of recent homes communities and even these days, the emergence of public installation systems is tied on to growth of suburbs.

Water is on the market in giant quantities underground and however but 1 Chronicles in it's pure water. Most of the planet is calculable at 1.4 billion cube-shaped kilometers (326 million cube- shaped miles) seawater or frozen ice and ice cubes. water contains regarding 35 g / litre (4.5 ounces per gallon) of mineral or dissolved salt. This makes him unprepared for drinking and most industrial or agricultural use. In several areas, however, tide availableness is reduced due to the ascension of urban and industrial development and also the space within which they operate Pollution issues. Asian country faces a significant shortage of natural resources, particularly water with a read to growth and economic development. Most fresh bodies round the world pollution, so reducing water carriers.

The life depends on water and is gift in nature in many species like ocean, lake, river, rain, clouds, snow and fog etc. thanks to human growth, agricultural development, urbanization and industrial development have exacerbated high pollution problem with reducing access to drink. several elements of the planet face such shortages water. Most of the sewer water is drop directly into rivers, lakes and estuaries while not treatment. Lakes are a vital part of the layer that's not solely a supply of precious water, but to provide appropriate surround for plants and animals, balanced hydrological

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"USE OF SILICA FUME AS A PARTIAL REPLACEMENT OF CEMENT IN CONCRETE"

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ABSTRACT

In recent years, there are many attempts on improving properties of concrete for more strength and durability. Silica Fume and other industrial hydro-products can be used to improve the strength and water permeability of OPC. In this experiment, we're using silica fume to replace 20, 25, and 30% of the cement. The main goal is to compare the difference between concrete with less percentage of silica fume and high percentage of Silica Fume. Our future goal is to analyze that the concrete with high percentage of silica fume which is of 20% , 25% , 30% will be satisfied with the test performed on it.

INTRODUCTION

High workability, high density, excellent modulus of elasticity, high dimensional stability, superior abrasion and impact resistance, and high strength and cavitation resistance are all reasons for OPC's appeal. To achieve economic advantages with sustainable construction there are a number of cementitious materials like silica fume and fly ash are commonly used in cement production. OPC is often used to mobilise their pozzolanic effect, which increases the strength, workability, durability, fracture resistance, and permeability of the material. "Concrete that fulfils unique performance and homogeneity standards that cannot always be accomplished routinely using ordinary constitutional and typical mixing, putting, and curing methods," according to the American Concrete Institute.

Silica fume is an oxidised vapour produced in electric furnaces during the formation of silicon metal and ferrosilicon alloy. Silica fume is an ultrafine powder with a surface area of 13,000 to 30,000 m2 per kilogramme with particles that are 100 times smaller than normal cement particles.

The majority of the rigorous study is spent on compressive strength and rebound No. though the literature regarding silica fume seems to be reached. It is there for necessary to investigate the strength property like compressive strength and flexural strength test on beam which is characteristic of ordinary Portland cement (OPC). This type of concrete is employed in a variety of projects because it is cost-effective, durable, and safe.

BACKGROUND

Because of the escalating cost of materials used in concrete and the environmental concern caused by cement manufacturing, several researchers have been attempting to replace the ingredient of concrete with a low-priced, locally accessible alternative. As a result, the special cementitious materials are gaining popularity. The use of additional cementatious material has been significant in the past and may continue to be so in the future.

Smelting silicon metal and ferrosilicon alloy produces silica fume, which is used as a secondary cementing material. It may include more than 85% SiO2. The high amount SiO_2 content makes it highly reactive pozzolanic material

MATERIALS

1. **Cement:** we used ordinary Portland cement (OPC) in this present study. It is generally created from limestone and was evolved from other forms of hydraulic lime.

2. **Aggregate:** Construction aggregate is a general term for coarse- to medium-grained particulate construction material.

3. **Silica fume:** Xetex industries Pvt. Ltd. , Bhivandi supplied us the silica fume. This research utilized a grey-colored silica fume.

4. **Sand:** We have used crushed sand in this research.

MIX PROPORTION

The materials utilised in this study are readily available in the market. In this study, OPC is employed, which is partially substituted with Silica Fume (up to 20%, 25%, and 30%). Concrete mix proportion of 1:1:2 by volume was used in this result. The ratio of binding material in

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"Plastic Waste Utilization for Manufacturing of Paver Block"

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[1-4] *Civil Engineering Student PHCET Rasayani, Maharashtra, India*
[5]*Prof. Chaitanya Khaire, Dept. of Civil Engineering, PHCET Rasayani, Maharashtra, India*

ABSTRACT

Plastic Pavers are created by recycling waste plastics. Plastic garbage, which is growing at an alarming rate, has become an eyesore and, as a result, pollutes the environment, particularly in urban areas. A considerable amount of plastic is carried into the separating regions and then wasted or burned, polluting the environment, as well as air As a result, these waste plastics will be put to good use.The usage of plastic in everyday life is expanding. Every year, India produces 26000 tonnes of plastic, which is extremely detrimental to the environment. Because the breakdown of plastic is quite gradual, we decided to employ it in our project to make paver blocks. We use plastic waste to replace cement in this procedure. The project is really beneficial in reducing plastic trash. In this project, we use a variety of materials in suitable proportions, such as sea sand and quarry dust.

1. INTRODUCTION

Plastic is manufactured via poly condensation from natural elements such as cellulose, coal, natural gas, and crude oil. Plastic is a flexible organic substance made up of synthetic and semi-synthetic organic compounds that can be easily moulded into solid objects. Plastic is employed in a wide range of items, including paper crafts and space crafts. Because plastic is sturdy and long-lasting, it provides superior strength. Then there's the lighter weight, weather resilience, and chemical resistance. Plastic may be easily moulded into any shape. Long chains of atoms are linked together in plastic polymers. Plastic is usually an organic polymer with a high molecular mass, although it can also contain other materials. Plastic can be used as a good binding material due to the above features.

1.1 PAVER BLOCK

Block paving, often known as brick paving, is a popular decorative method of laying down a pavement or hard surface. Individual bricks may be pulled up and replaced afterwards, which is a major advantage of brick over other materials. Once the paving bricks have been changed, this allows for corrective work to be done beneath the surface of the paving without leaving a permanent mark. Driveways, pavement, patios, town centres, precincts, and, more often, road surfing are examples of common uses.

1.2 EXPERIMENTAL PROPERTIES

1.PLASTIC WASTE

The plastic used in this procedure is gathered from the local region in the form of plastic bottles. Plastic's basic features are listed here.

Table – 1: Properties of plastic bottles

Sr. no.	Particulars	Value
1.	Melting point	115 C
2.	Thermal coefficient of expansion	Ca.0.6 x 10^-4 to 2.3 x 10^-4
3.	Density	0.920 -0.950
4	Tensile strength	0.20 – 0.40 ((N/mm2)

2. QUARRY DUST

Crushed sand with a particle size of less than 4.75 mm is extracted from rock using state-of-the-art crushing equipment. The following are the characteristics of quarry dust:

Table- 2: Properties of Quarry Dust

Sr. no.	Description	Value
1	Specific gravity	2.620 & 2.70
2	Grading zone	Zone II
3	Fineness modulus	2.952

3. SEA SAND

We used the sea sand because it represents greater strength. The paver block is prepared and tested, with the findings compared to those of a concrete paver block.

Development of Solar Concentrator studded with Optical Fiber for Daylighting

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Abstract - Over the years there has been an increase in the energy consumption pattern which has given rise to various environmental issues. Around 20% of the energy is used for lighting purpose and conferring to a U.S. Energy Information Administration 2007 & International Energy Agencies 2006 report lighting amounts for 7% of the CO_2 emissions globally and which utilizes renewable form of energy so that even actions like lighting the buildings could be sustainable. About 50–80% of energy consumption for lighting can be saved through designing an efficient daylighting system to light the interior spaces in the buildings, which would provide various physiological and psychological benefits for the wellbeing of human beings. In this study a daylighting system is designed on the Cassegrain principle and evaluated through software's and experimental setup. A model of the daylighting system is constructed using simple and low cost materials, easily available and reliable. Maximum solar radiation point was ascertained by studying sun path diagrams. The model was tested for its lux intensity and temperature on 5 sunny days over a period of 6 hours. The daylighting system provides a lux intensity of above 1400 at its peak hour and 323 lux at its minimum through a bundle of 209 individual optical fibers enclosed in a circular pipe of 3/4 inch in diameter. The temperature attained was 60 °C and 50 °C which were well within the operating temperature limits of the optical fiber.

Keywords — Cassegrain reflector, Daylighting system, Fiber optic concentrator, lux intensity, Non-imaging concentrator, Total internal reflection

INTRODUCTION

1.1 SOLAR POTENTIAL OF INDIA

Energy is in everything – it is often defined as 'the ability to do work [1]. Energy resources are present in two types and they are as follows.

- Renewable (a source that can be easily refilled)
- Nonrenewable (a source that cannot be easily refilled)

Solar energy is renewable power source which is an inexpensive, clean and harness able resource which could be harnessed anywhere in the world. Around 1000 W/m2 density energy is received on a clear day at Earth surface which would be perpendicular to the incoming sunrays and would be at sea level [2]. Hence, a point on any location on the earth where the sunlight can reach becomes a potential point to harness the solar energy coming from the sun. India geographical extents, i.e., latitude and longitude extends from 8°4' N to 37°6' N 68°7' E to 97°25' E which is shown in Fig. 1.

India geographical extents it is situated very close to the equator, also the tropic of cancer line which is an imaginary line inclined at an angle of 23.50 degrees North from the equator passes through eight states in India that indicates it lies in the luminous regions of the world. Due to this India receives around 300 days of daylight of the 365 days in a year that makes the country a favorable place for solar exploitation [3]. Fig. 2 shows a map of India indicating the various parts of the country with their solar radiation levels.

Fig 1. Latitudinal and Longitudinal Map of India [5]

Rajasthan, Northern Gujrat and some portions of Ladakh area, some portions of Andhra Pradesh, Maharashtra, Madhya Pradesh get a good amount of solar radiation with

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Analysis of Labour Productivity and Determining the Parameters Which Affects it in Aluminium Formwork System

Rajnish Singh, Karthik Nagarajan, Raju Narwade

Abstract: The construction industry is considered to be one of the rapidly growing industries of India. So, to fulfil such a vast and constantly increasing construction demand the labour productivity is the key factor to maintain client satisfaction, attract investment, and contribute by helping the nation with its economic growth. Aluminium system formwork is one economical and technical approach to effectively maintain productivity of labours on site. Various research studies have been conducted to compare different types of formwork system and the advantages and disadvantages of each type of formwork system are examined in terms of cost, duration, quality etc. There is no standard procedure to put a number on the efficiency of the site labour, using aluminium formwork system in the industry. So, the primary objective of this study is to find and the factors affecting the labour productivity. For this, research is performed on Purva Silverstands project, Pune, Maharashtra (Residential Project). Labour productivity and its variations could generate a greater impact on the project economy and project duration. Low productivity can decrease profitability and increases construction cost. This case study shows that the actual productivity observed is less than the target productivity in some of the months, the reasons for variation in target and actual productivity is examined and the factors that hamper the productivity mostly are natural (rain), improper management and any breakdown of machinery. Whereas, the maximum productivity achieved in a month is 10.36 sqm per man per day.

Keywords: Labour productivity, Aluminium Formwork, Conventional Formwork, Factor affecting labour productivity, Mivan.

I. INTRODUCTION

1.1 General:

The demand for houses in India is huge due to increase in the rate of urbanization so to mitigate the shortage of houses, Pradhan Mantri Awas Yojana (Urban) Mission launched on 25th June 2015 which intends to provide housing for all in urban areas by year 2022.

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The Mission provides Central Assistance to the implementing agencies through States/Union Territories (UTs) and Central Nodal Agencies (CNAs) for providing houses to all eligible families/ beneficiaries against the validated demand for houses for about 1.12 cr. As per PMAY(U) guidelines, the size of a house for Economically Weaker Section (EWS) could be upto 30 sq. mt. carpet area, however States/UTs have the flexibility to enhance the size of homes in consultation and approval of the Ministry(pmaymis.gov.in). So to fulfil the vast and speedy construction demand the productivity is the key factor to attain and keep up the client satisfaction, attract Investment and contribute in making the nation economically successful. By making appropriate use of the available resources such as, material, labour management and capital and increasing efficiency, the productivity can be increased. Since labours contribute to the success of almost all the aspects of the construction project, labour productivity stands as a primary measuring tool. labour productivity has a direct impact on formwork technology. Aluminium formwork is being widely used these days in mass housing projects. Considering the economic benefits of aluminium system formwork and a step towards technological advancement, it is very necessary to have a practical analysis of labour productivity in aluminium formwork construction.

1.1 Significance of Aluminium system formwork with respect to labour productivity:

When it comes to achieving better labour productivity in low-cost housing projects, the importance of the role played by Aluminium system formwork cannot be ignored. Conventional material used to fulfil housing projects being a slow process cannot keep up with the current demands. And this is where the advanced aluminium system formwork steps in because it can keep up with the pace to fulfil the demands. Apart from this, it is fairly simple and easily adoptable for mass construction of houses. It maintains the total quality of work with a methodology that is well defined and can enhance the productivity of labours. But the same cannot be said about the application of this type of formwork in construction of high-rise structures as lack of proper planning can make achieving productivity advantage unsuccessful. Therefore, analysis of labour productivity in aluminium formwork is obligatory to have more realistic planning to mitigate any delay in the project due to labour productivity.

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Research Article

Impact of controlled permeable formwork liner against chloride penetration on the concrete structures

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Abstract

It has become a requirement to enhance the surface quality of concrete structures and their durability. A non-woven formwork called Controlled Permeable formwork (CPF) liner was developed. This CPF liner is permeable to air and water however prevents the getaway of cement and small particles. This paper investigates experimentally the impact of CPF liner on the concrete surface against chloride penetration. The concrete mix contained ordinary Portland cement (OPC) 53, pulverized fly ash (PFA), Micro silica, locally available aggregates, crushed sand, water and superplasticizer. The cylindrical and cubical concrete specimens were cast with impermeable steel formwork (SF) and CPF liner. The cubic and cylindrical specimens were tested at the age of 7 days and 28 days. Compressive strength and Rapid chloride penetration tests (RCPT) were conducted. The concrete cast with CPF liner gives excellent compressive strength 14% more than specimens cast with steel formwork and has acquired better resistance against Chloride penetration. The results show that the concrete sample cast with CPF liner shows 9.98% less charges passed than specimens cast with steel formwork.

1. Introduction

Reinforced concrete structures need to be durable. Their durability is a major subject on a global scale [1]. Corrosion of steel reinforcement depends upon the exposure conditions, ensuing in millions of expenses being spent on repair and maintenance. Durability of reinforced concrete structures depends on the quality of the cover zone. Cover region is a primary line of defence against either physical or chemical deterioration of the concrete structures [2]. Corrosion of the steel reinforcement in the concrete is due to chlorides and CO_2 from the surrounding environment [3]. Chloride diffusion coefficient of concrete relies upon the water/cement ratio and the cement type [4]. Impermeability of the surface of the concrete structures performs an essential role for attaining long term durability. And that can be achieved by increasing the cement content for the whole entire volume of concrete and decreasing the water/binder ratio [5]. And another method is to use Controlled Permeable formwork (CPF) liner.

CPF liner is a hydrophilic fiber texture, which removes excess quantities of water and decreases water/binder ratio and improves the concrete strength [6].

CPF liner consists of three different primary factors. 1) A filter that allows water and air from fresh concrete to pass through it and keeps cement and other small particles. 2) This water and air are transferred to outside the formwork through drainage system and creates denser and less porous concrete surface. 3) The filter and drainage system is supported by structural support that maintains formwork shape and concrete pressure. Figure -1 shows the overall factors of a CPF system.

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Text to Speech Conversion using real-time OCR

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Abstract
Pattern recognition, a branch in machine learning is/can be helpful in many different ways. OCR is used to recognition of character with high accuracy. Using handheld mobile device camera for capturing an image of a printed or handwritten document to generate text from the same. On global scale there are billions of android devices running. There are about 45 million blind people and 135 million visually impaired people worldwide. Disability of visual text reading has a huge impact on the quality of life for visually disabled people. Although there have been several devices designed for helping visually disabled to see objects using an alternating sense such as sound and touch, the development of text reading device is still at an early stage. Existing systems for text recognition are typically limited either by explicitly relying on specific shapes or colour masks or by requiring user assistance or may be of high cost. Therefore, we need a low-cost system that will be able to automatically locate and read the text aloud to visually impaired persons. The main idea of this project is to recognize the text character and convert it into speech signal.

Keywords: *OCR, machine learning, text-to-speech*

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I. INTRODUCTION

There is a lot research work has done on Pattern Recognition which comes under Machine Learning, Artificial Intelligence. OCR well known as Optical Character Recognition is one of the leading branches of the Pattern Recognition. Optical character recognition is them mechanical or electronic conversion of images of typed, handwritten or printed text into machine-encoded text, whether from a scanned document or a photo of document. It is widely use as form as a form of information entry from printed paper data records, whether passport documents, invoices, bank statements, computerized receipts, business cards, mail, printouts of static data or any suitable document. OCR is a field of research in pattern recognition, artificial intelligence, computer vision. The application uses a webcam to take input. Input is a binary image scanned by the webcam. The OCR engine processes the image data and converts it into a text. The Google Vision API detects the text and gives speech in output. The system uses machine learning, it takes a training data and learns from it, hence the accuracy of the output grows down the pages, pass by pass.

1.1.2 Design Methodology

Recognition of scanned document images using OCR is now generally considered to be a solved problem for some scripts. Components of an OCR system consist of optical scanning binarization, segmentation, feature extraction and recognition. With the help of a digital scanner the analog document is digitized and the extracted text will be preprocessed. Each symbol is extracted through a segmentation process. The identity of each symbol comparing the extracted features with descriptions of the symbol classes obtained through a previous learning phase. Contextual information is used to reconstruct the words and numbers of the original text. The binary image taken by the webcam is then sent to the OCR engine for the pre-processing over the image. In the pre-processing the text is recognized by different terms. The text is then further converted into speech. The final output as a speech is provided though the speaker of the desktop or laptop.

Dementia Detection Using LSTM and GRU

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Abstract:
Neuro-degenerative infections, like dementia, can affect discourse, language, and the ability of correspondence. A new report to work on the precision of dementia identification examined the utilization of conversation analysis (CA) of meetings between patients and nervous system specialists to recognize reformist neuro-degenerative (ND) memory issues patients and those with (non-reformist) FMD (Functional Memory Disorder). In any case, manual CA is expensive for routine clinical use and hard proportional. In this work, we present an early dementia discovery framework utilizing discourse acknowledgment and examination dependent on NLP method and acoustic component handling strategy apply on various element extraction and learning using LSTM (Long Short-Term Memory) and GRU which strikingly catches the transient provisions and long haul conditions from authentic information to demonstrate the abilities of grouping models over a feed-forward neural organization in estimating discourse investigation related issues. Dementia dataset is taken where the audio file is considered for speech recognition analysis on basis of that data is generated and it is predefined given in dementia data databank. That audio file is converted to text based on speech analysis. Using LSTM and GRU gives efficient results.

Keywords: Dementia Detection, Long Short-Term Memory, GRU, Speech Analysis, features extraction.

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Design of Solar Power Water Trash Collector

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Abstract
The world today faces major garbage crisis the product from rapid economic growth, overcrowding, poor urbanplanning, and corrosive corruption. In this presents arduino based totally River Cleaning System. It is the system which floats on the water and the energy is supplied from battery. The important purpose of the projectis to reduce the manpower, time intake for cleaning the river. For that cause we designed the automated system for river cleaning. The outcomes of system performance were found that the conveyor belt can collect the garbage from the river for ex. Glass bottles, plastic waste, etc. at the surface of the river. This work emphasis on Design and Analysis of the floating waste collector Machine The system is basically a boat kind of thing which will float to various corners of the water body, cleaning the light and floating wastes present in the water. We are using solar power as a main power source, thus by using alternate source of energy and recycling of water this machine helps in eliminating the floating wastes present in the water.

Keywords: *Solar power, Arduino Uno, Microcontroller, Bluetooth, Renewable source, Conveyer belt, Water pollution,*

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I. INTRODUCTION

For constantly growing the water pollution inside the lakes, ponds and all the others water resources that are come inside the human touch and beneficial to the people for lots reasons. This is the important issue forthe human society that the water required for each and every motive to the human being must be safe, clean and without pollution. But the lack of the equipment and the coast of the pollution controlling equipment it's more difficult to make rivers garbage and pollution free for this motive the river cleaning a system is designed.

Floating bottles, plastic bags and even toys have become a part of the marine environment in recent times. Pitiful photographs of such plastic debris washed ashore on remote shorelines have frequently made headlines. Most of this plastic pollution is attributed to an increase in tourism, shipping and fishing activities. But according to a recent study, a considerable portion of plastic garbage afloat in the open waters originates on land, and is drained into the seas by rivers. The floating water waste extractor used for the removal of waste debris in water bodies. System consists of mechanism for lifting waste debris from the surface of water bodies.It consists of belt driver mechanism. This is remotely controlled machine. The system is work on solar power during daytime during night time it can operate on battery.

1.1.2 Pollution of Streams by Garbage and Trash

The most common litter in world streams is household trash, including plastic cups, plastic bags and wrapping materials, fast-food wrappers, plastic bottles, and other plastic containers. Plastics can be especially hazardous to wildlife. Depending on their form they can either be ingested, causing internal organ failure, or they can cause a slow strangulation.

Organic waste (e.g., wood wastes) can have chemical and biological impacts on rivers and streams. Among the many impacts are interfering with the establishment of aquatic plants, affecting the reproductive behaviour of fish and other animals, and depleting the water of dissolved oxygen as the wastes decompose. Further, toxic materials can leak or leach out of certain kinds of trash (e.g., pressure-treated lumber, used oil filters, and lead-acid batteries).

1.1.3 Motivation

For constantly growing the water pollution inside the lakes, ponds and all the others water resources that are come inside the human touch and beneficial to the people for lots reasons. This is the important issue

Easy Detection of Rare Dementia Based on Speech Analysis

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***Abstract*—The increase in the number of dementia patients is a serious problem in developed countries. It is important to diagnose an underlying disease correctly because dementia has treatments depending on the disease. We have been investigating frontotemporal lobar degeneration (FTLD), which is one of the underlying diseases. This paper presents a speech analysis-based FTLD screening system. We used speech features to classify FTLD, Alzheimer's disease (AD) and HC. We confirmed that our method can classify three groups with accuracy of 0.81 and macro F-measure of 0.74. Our screening system has the potential to detect FTLD through short speech.**

***Index Terms*—Speech Analysis, Dementia, Frontotemporal Lobar Degeneration, Alzheimer's Disease, Ensemble Learning**

I. Introduction

In recent years, a further increase in dementia patients is a serious problem. According to the guideline from the World Health Organization (WHO), 50 million people have dementia worldwide, and there are nearly ten million new cases every year [1]. It is important to diagnose an underlying disease correctly because dementia has treatments depending on the disease. However, it is difficult to diagnose an underlying disease correctly by a general practitioner. Frontotemporal lobar degeneration (FTLD) is one of them [2] [3]. This disease has rare cases than other dementia and is difficult to distinguish from Alzheimer's disease (AD). So, patients with suspected FTLD should be diagnosed by a dementia specialist. Therefore, an easy screening system is needed to refer patients with suspected FTLD to a specialist.

Previous studies have proposed screening methods for dementia using speech analysis as an alternative to neuropsychological tests [4]. These methods are aimed at classifying AD and healthy control (HC). In this study, we have been developing an easy screening system for FTLD using speech analysis. Fig. 1 shows the overview of our system. We extract acoustic, linguistic, and temporal features from speech sounds and classify FTLD, AD and HC.

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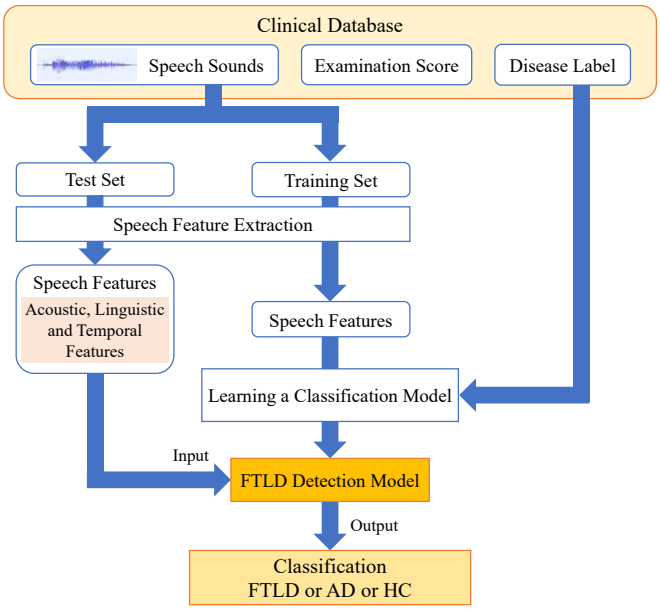

Fig. 1. Overview of our FTLD screening system.

II. Methods

A. Participants

In this study, the target diseases are FTLD and AD. We recruited participants with each disease and HC. Eighty-nine Japanese subjects (36 males and 53 females between the ages of 46 and 84) participated. TABLE I shows the list of participants. We collected participant's speech sounds during cognitive tasks in Nagoya University Hospital, Osaka University Hospital and Nagoya University School of Health Sciences. In this study, the Mini Mental State Examination (MMSE) [5] and the Western Aphasia Battery (WAB) [6] were conducted. We analyzed speech sounds during the tasks and extract speech features. This study was conducted with the approval of the Hospital Institutional Review Board for Clinical Research of each hospital.

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COGNITIVE IMPAIRMENT DETECTION USING GRU

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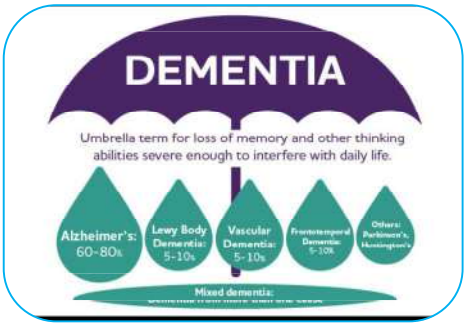
ABSTRACT:



Cognitive Impairment, like dementia, will impact speech, language, and therefore the capability of communication. A recent study to boost the dementia detection accuracy studied the usage of CA (Conversation Analysis) of interviews among patients and neurologists to differentiate among progressive ND (Neurodegenerative Memory Disorders) patients & those with (non-progressive) Functional Memory Disorders (FMD). Manual CA, on the other side, is costly & complex to scale up for frequent medical usage. Many studies reviewed did not utilize a sequence or random selection of a sample but selected a patient sample and a corresponding control group sample. Although this is not a major problem, it has several issues and may be a source of bias. Due to appropriate testing, the majority of studies have a low bias value for reference standards. In instances designated as uncertain, insufficient information about the tests utilized was given.

An early dementia detection system has been presented using speech recognition and analysis based on NLP technique and acoustic feature processing technique apply on multiple feature extraction and learning using GRU. In this work, Dementia dataset is taken from an audio file which is converted to text based on speech analysis. Then created the data frame with the help of the plan ACQ library. Text annotation, correction, and cleaning are done on the second features data frame. From this get some sentence and clean data as well as for dementia label and follow the process of dataset Tokenization and generated the full interview feature file then perform sentiment analysis on the data frame.

KEYWORDS: *Dementia Detection, GRU, Speech Analysis, features extraction.*

INTRODUCTION

Trust in mild cognitive impairment (MCI) & Alzheimer's disease (AD) diagnosis remains uncertain. Evidence shows that doctors are not adequately attentive to signs of cognitive impairment or early dementia, which is being attacked by the demand for care due to increased numbers of medical problems and the therapy available [1]. A major source of impairment and dependence among older people is AD and linked dementia illnesses globally and among the most expensive illnesses of society. By 2030, the worldwide cost of dementia is anticipated to be US$2 trillion, which may overwhelm the systems of health & social care. AD is an unalterable brain condition that gradually reduces the

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Smart Sanitizer Vending Machine

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A B S T R A C T

Smart sanitizer vending machine is automated, non-contact, alcohol-based hand sanitizer dispenser, which find it's utilized in hospital, workplace, office, dispenser, which finds it's use in hospitals, work places, offices, schools and far more. Alcohol is largely a solvent, and also a really good disinfectant compared to soap or solid soap, also it doesn't need water to clean off since it's volatile and vaporizes instantly after application to hands. it's also proven that a degree of >70% alcohol can kill Coronavirus in hands. Here, an ultrasonic sensor senses the hand placed near it, the Arduino Nano is employed as a microcontroller, which senses the gap and also the result's the pump running to pump out the hand sanitizer. The IR Sensor is used for sensing the bottle detection. The pump is connected to an Arduino Nano to control the flowing liquid of the sanitizer. Red LED and Buzzer is employed for the user to know that the setup is in working mode.

Keywords:Arduino Nano, IR Sensor

1. Introduction

The corona disease may be a major problem future world. As there's a severe attack on this world, the people are plagued by the corona disease. The corona disease isn't any other virus attack, it makes severe damage to the human body by infecting the respiratory. The virus is heavily spreading within the world, despite the nations attempts to watch and maintain the spread of corona within the nation and other nations. There's a strict evaluation everywhere to regulate thespread of corona disease. The hospital and also the nursing staff are suffering to cure the affected people and stop spreading the virus to the neighboring people.As there's an impression in using the hand wash sanitation by foot or by pressing the sanitizer bottle accustomed have a variety of the virus disease from one human to a different. a protracted press is created with the footer, such that the mechanical force sprays out the Sanitizer liquid. Aged people are unable to use this technique as there's mechanical stress involved and the risk of touch can't be ignored.The Smart Sanitizer Vending machine with Arduino, has the Arduino microcontroller to manage the sanitizer liquid with the assistance of a DC pump. This can be accustomed to power up the system by the external power supply of 12V battery. This method is easy to use and therefore the advantage is that there is no need of battery replacement for the usage of the system.The mask and sanitizers provided anywhere to shield the people from spreading the virus and to kill the virus from the human hand. The virus is spreading from the human hand and mouth saliva. The mouth spread is controlled with the mask cloth and also the human hand is controlled by the hand wash sanitizer. The hand touch while pressing the dispenser usage also spreads from human to human. There should be an automatic hand sanitizer vending machine, to manage and maintain the spread from human to human.

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Distribution Transformer Health Monitoring System Using IOT and GSM

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Abstract : In this paper, Distribution transformer parameters like load currents, Voltage and ambient temperature are monitored and corrected by using IoT and GSM. On-line monitoring system integrates (GSM) Modem, with a standalone Arduino and different sensors. The obtained parameters are processed and recorded within the system memory. If any abnormality or an emergency situation occurs the system sends SMS (short message service) messages to the mobile phones containing information about the abnormality in step with some predefined instructions programmed within the Arduino. A robust GSM network is intended to send data from a network to another network for correct corrective action at the earliest. Any change in parameters of transmission is sensed to shield the complete transmission and distribution. Performance of the model developed is tested and monitored using various parameters like transformer Over voltage ,Under Voltage, Over current , Under current, Over temperature, and Oil condition, etc. A recent huge interest in Machine to Machine communication is thought to be because of the Internet of Things (IoT), to permit the likelihood for autonomous devices to use the Internet for exchanging information. This project will do real time monitoring and fault detection of transformers and record key operation indicators of a dispersion transformer like transformer temperature and humidity ,load ,fire, gas, oil level. It would minimize working efforts and improve efficiency ,accuracy, and stability. During this project, sensors are accustomed to sense the most parameters of the kit like fire,gas,temperature. This sensed data is distributed to arduino and it checks and limits the parameter which further send to the IoT web server Adafruit software using Wi-Fi module of those data so as to ensure the proper information is in hand to the operator and operator can make useful decisions before any catastrophic failure on the idea of knowledge of parameters.

IndexTerms **- Transformer, GSM module, Arduino.**

I. INTRODUCTION

Electricity plays a significant role in our life. Every moment of our life depends upon electricity. Electricity has several components and equipment helping humans to transfer and regulate the distribution per usage. The foremost crucial equipment of transmission and distribution of wattage is the transformer. In power systems, an electrical equipment distribution transformer directly distributes power to the low-voltage users and its operation condition may be an important criterion of the complete network operation[1]. The majority of these devices are in condition for several years in numerous (electrical, mechanical and environmental) conditions. They're the foremost components and constitute an oversized portion of capital investment. Lifespan of the distribution transformer guaranteed by the operation of the distribution transformer under rated condition as per nameplate specification. However, their life is significantly reduced if they're subjected to overloading, heating, low or high voltage/current resulting in unexpected failures and loss of supply.

II. LITERATURE SURVEY

In most power companies, for online monitoring[1] of power transformers, use supervisory control and data acquisition (SCADA) systems,aside from online monitoring of power transformers, extending the SCADA system is additionally a fashionable proposition[2],[3]. Power transformers are currently monitored manually, where a non-public visits a transformer site, for maintenance and recording purposes. But main drawbacks of these systems are, it cannot provide information about overloads (Voltage & Current) and overheating of transformer oil & windings. Because of these, the transformer life is reduced. GSM system for mobile communication modem and GSM modem helps to look at transformer health by sending messages to the system[4].

Nowadays, with a large number of power distribution transformer stations which are far-off from the city, wireless GPRS transmission provides an honest communication solution to supervise power distribution transformer stations. The remote wireless monitoring system scheme for power distribution transformer stations supported by GPRS wireless network was designed. A control terminal system implementation was mainly given, which adopted LPC2132 as the main processor, GR47 because of the date communication module[5]. The flow chart and monitor terminal were also designed by using the software. At last, the way of configuring the GPRS module to connect between networks is analyzed.

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FLOOD MONITORING SYSTEM USING ARDUINO

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Abstract: The crucial disaster that disturbs the normal routine of people is flooding. Based on this, there is an important requirement to maintain a complete analysis over environment in frequent manner. Nowadays all prediction level has been moved from physical to mathematical modelling. Where, this paper distributes with the strategies of flood alerting system with help of GLOBAL NETWORNIG SYSTEM (GSM) an embedded system which would give the real time calculation along with Wireless Sensor Network (WSN) for arithmetic processing, prediction and analysis that would help to send an alert message to the nearby surrounding and reduces the time of risk. Waterfall model algorithm is used as the approach. Here the Arduino uno is connected to water float sensors & ultrasonic sensor to analyses the water level. Further, these calculated values will be passed to the Arduino which is been developed with Java, C++. The Arduino would give the alert message to the IoT module. These analyses are made to discuss how the IOT is embedded in real time to prediction and alerting.

Keywords: *Arduino board, LCD screen GSM board, Water FLOAT sensors, connecting cables, Power supply, LED, Ultrasonic Sensor, Buzzer, Soldering equipment.*

I. INTRODUCTION

Flood takes place when water overflows from the river, lake or from heavy rainfall and it can happen at any time of the year. Flooding can be very crucial, when floods happen in an area that people live, the water carries along objects like homes, cars, furniture and even people. It can wash out property, trees and many more heavy items. For years, flooded roads have been a problem in area.

It causes heavy flow of traffic. Both motorists and commuters ARE getting s adhered in a flooded areas and getting lost in finding possible routes just to go to their destinations. When traffic happened, people's money, time and effort are wasted. Through the local government unit flood control has been extending their efforts to inform the commuters regarding the situation in flooded areas during rainy season, still the dissemination of information to the locals are not enough.

For this reason, the "Arduino Flood Detector System" is been develop, to help the road user to keep away from this problem happened. It was invented based on problem faced by motorists and commuters when flood occurred. This will avoid the traffic jam because the users have a time to find a possible routes before they are going to be adhered at the flood area.

The system will work when the admin activates the system and when water along the road detected by distance over ultrasonic sensor. When the flood occurs, the ultrasonic sensor will send signal to the microprocessor circuit and the sense water level will be display in the user interface and it will automatically send a Short Message Service (SMS) to those allow residents and it will continue update until the water level detected returns to normal. The process repeats as the water level continuous to rise. The idea of an SMS based warning system was proposed because mobile phones have become a popular communication device among people all over the world. All mobile phone is able to communicate because it comprises of a GSM. This system used to detect the current water level of flood around the road and will give real-time information to the motorists or commuters that has still not passing through the flooded areas to avoid problem.

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IOT SMART ENERGY METER MONITORING WITH THEFT DETECTION

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***Abstract*—**This project proposes the wireless monitoring system of energy meter using IoT and GSM. In addition, it can be used as backup supply and over consumption of energy notification as an additional feature embedded in this system. Due to the advance technology in order with the Internet of Things (IoT) can be also applied in advance as an application of Artificial Intelligence (AI) into a manual device, transitional to an automated device such as smart meter which helps the smart cities to have an effective energy management system as a new concept. This system used Node MCU as a micro-controller board with Wi-Fi module to provide IoT communication with IoT platform such as Blynk application. The prototype designed intends to monitor daily energy consumption and theft detection in the smartphone application interfaced with Blynk server and also provide awareness to save electricity through notification using Blynk features by the smartphone application. and text message.

Keywords— GSM, IoT, Energy Meter, Theft Detection

I. INTRODUCTION

In this project we are going to make our own IoT Based Electricity Energy Meter using Arduino & monitor data on the Android Application. With the modern technology, you need to go to the meter reading room and take down readings. Therefore, monitoring and tracking records of your electricity consumption is a monotonous task. To automate this, we can use the Internet of Things. The Internet of Things saves time and money by automating remote data collection. Smart Energy Meter has received many approvals across the world in past years. So, why not to have our own IoT Based Electricity Energy Meter?

We need to select the current sensor as well as the voltage sensor so that the current & voltage can be measured and therefore, we can know about the power consumption & total power consumed. Using the Sensor with ESP Wifi Module & Send the data to Blynk Application. The Blynk Application Dashboard will display the Voltage, Current, Power & total unit consumed in kWh. In the world of development in technology and intelligence, individuals currently days don't have that abundant of spare time to cope with issues occurring with them manage electrical devices and alternative electrical devices that area unit being employed oftentimes. As we all know automatic fault detection of electrical devices may be a difficult task therefore to cope with those faults occurring in any particular device, we have got come back up with this project of automatic fault detection in any device with the assistance of IoT, which is able to scale back the chaos of career any trained worker for detection initial so obtaining it repaired and thus enhancing the

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Programmable Energy Meter for Household Auditing

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Abstract**—** *Gradually, energy demand keeps increasing so that it is necessary to minimize energy consumption for that energy conservation is needed. For Conservation of energy the best option is energy audit. Energy audit is a process to determine when, where, why and how energy is used in a plant or building.*

Assemble these data helps to check the situation where there is need to improve energy efficiency and decrease production cost. Usually, an energy audit is achieved by certified energy Auditors. By conducting energy audit process in industry, employees begin considering energy as a manageable expense and try to conserve it in day-to-day action.

The main aim of this project is to calculate use of energy in industry for lighting purpose and determine the opportunities for energy saving with energy efficient equipment's or techniques have to be adopt in industry to make industry more energy efficient through energy audit.

Keywords— Energy Meter, Microcontroller 8051, Step Down Transformer, Comparator.

I. INTRODUCTION

The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. The term energy management means many things to many people.

The aim of Energy Management is to attain and keep optimum energy procurement and utilization, throughout the organization and:

• To reduce energy costs/waste without affecting production & quality .

• To reduce environmental effects.

The main purpose of energy audit is to establish quickly and reliably, the basic relative costs of the various forms of energy purchased their main use and to identify mam locations where losses, wastages or inefficiency occurs.

In simple terms, energy audit assists to recognise more about the ways many energy sources are used in the industry and helps to identify areas where waste can occur and where scope for improvement may be possible. Thus, energy audit is one of the ideasused in the energy management and it includes methodological examination and comprehensive review of energy use in industries.

II. BASIC CONCEPTS AND LITERATURE SURVEY

Energy Audit:

Energy Audit is the important systematic perspective for decision-making in the area of energy management. It tries to balance the all energy inputs with its use, and serves to

Management Model of Smart Tourism Industry under the era of Big Data using Artificial Intelligent and Deep Learning

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Abstract

With the improvement of data innovation, enormous information thinking has entered into all parts of our public activity and business fields. With the improvement of economy, the travel industry has turned into the support point industry of the public economy. To accelerate the advancement of the travel industry, numerous territories and locales in China likewise follow the speed of huge information period and take full advantage of large information innovation to foster savvy the travel industry. In the present data age, huge information innovation has significant application worth and importance for the advancement of savvy the travel industry. In view of this, this study expects to concentrate on the utilization of huge information innovation in shrewd the travel industry. This paper chiefly utilizes information mining innovation and Bayesian organization model examination innovation to dissect the huge information of movement ticket information of shrewd the travel industry as an illustration to concentrate on the utilization of enormous information innovation in savvy the travel industry. It is found that the Bayesian organization model can be utilized to foresee the future pattern of air ticket cost changes by involving the information of a specific timeframe previously, and the forecast exactness rate is over 80.6%, which is more precise than the customary brain network model information examination innovation. Also, enormous information advancements, for example, information mining have been broadly utilized in shrewd the travel industry, which extraordinarily works on the clever level of the travel industry, and has significant importance for the improvement of brilliant the travel industry.

Keywords: Big Data, Smart Tourism, Bayesian Network Model, System, Utilization, Examination, Innovation, Travel Industry.

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Intelligent 5-G handover in heterogeneous network

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Abstract
Our Research "Intelligent 5-G handover in heterogeneous network" is a Portability the board is fundamental in versatile correspondence organizations to give a smooth association during clients' portability. The Handover control boundaries (HCPs), like handover edge (HOM) and time-to-set off (TTT), are major and fundamental elements in versatility the executives that should be |characterize| cautiously to make productive handover ([HO]) methodology. The case turns out to be more delicate with the high portability speed situations. This study proposes different HCP framework settings to be explored and broke down over B5-G organizations. They will be researched with different versatile speed situations to outline their effect on the organization execution. The approve framework execution, for example, reference signal got power (RSRP), HO likelihood (Bounce), HO ping-pong (HOPP), radio connection disappointment (RLF), HO interference time (HIT), and HO disappointment (HOF). Results show that the different framework settings give unique and huge effects on the presentation of B5-G organizations. The setting of HCP1 acquired the best execution in RSRP and RLF with - 69.7 dBm and 4.8%, separately, while the ideal presentation of HOPP, HIT, Bounce, and HOF is accomplished in the HCP6 setting with 0%, 0.03 ms, 0.06%, and 0.3341%, individually. The general result of all HCP settings is 54.934%. These outcomes demonstrate a tradeoff among RLF and HOPP with different HCP settings in B5-G portable organizations. The HCP framework settings should be changed cautiously considering different variables, for example, versatile climate and use case. The outcomes show that the HO execution affected fundamentally by the different HCP settings has been explored. The |HOPP| likelihood is profoundly impacted by TTT more than HOM. The using a high framework setting for |TTT| and HOM, for example, 4800 ms and 8 dB, prompts a huge decrease in HOPP likelihood to roughly 0.0001%. In any case, the RLF is decisively expanded as TTT and HOM are expanded because of the late HO choice. Choosing the ideal HCP settings is fundamental to give ideal HO choices.

Key: Intelligent, 5-G, handover, heterogeneous, network, HIT, HOPP,TTT, HOM, HCP, RLF.
DOI Number: 10.14704/nq.2022.20.2.NQ22337 NeuroQuantology 2022; 20(2): 466-471

Introduction

The gigantic increment of portable associated clients, versatile applications, different sorts of associated gadgets, and different administrations enormously increments portable information traffic development. Thus, the fifth-age (5-G) of the versatile correspondence organizations and then some (B5-G) have created to satisfy this extraordinary need of portable information traffic development later on.

This new versatile innovation is promising to furnish different portable correspondence administrations with a high information rate, more extensive data transmission, high traffic

Design and Analysis of Medium Utility Chassis of Heavy Motor Vehicle

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***Abstract*— In this work, the harmonic and static structural analyses of the ladder chassis frame are carried out by using ANSYS. Modal analysis through harmonic response of the chassis was done for structural steel and A710 steel materials. It was observed that a particular frequency was close to engine excitation. In this case chassis may experience structural resonance. It is to be noted that harmonic analysis as well as frequency response analysis will not give us stress- strain details. To know the stress- strain details, static structural analysis has been executed. Further assuming the given system to be of single degree of freedom system, Dunkerley's method and Rayleigh's method (for determination of natural frequencies) have been used for computation of natural frequencies analytically. Thus comparison of the natural frequencies of modal analysis through ANSYS workbench and aforementioned methods have been performed. Natural frequencies found to be significantly close and are in excellent agreement with each other. This is one of the novelty of the work. Further, frequency range chosen in the analysis is such that it uses some data from experiments which is another novelty. It should be noted that the given system is not a single degree of freedom system. Further stress and strain details executed with the help of static structural analysis revealed that A-710 is better material choice when compared with structural steel. Obtained results are being exploited to benefit Industry and scientific community for future endeavors. Further, efficacy of developed framework could be extended to other such alike applications.**

Index Terms: **Harmonic Analysis, Static Structural Analysis, FEA, ANSYS.**

I.INTRODUCTION

Chassis can be considered as back bone of the vehicle i.e. vehicle without body is chassis. Function of chassis frame is to provide mounting structure for various components of vehicles such as wheels and tires, control systems, suspension, transmission and power systems and body of the vehicle. Internal and external loads acting causes stress in chassis structure. Aerodynamic field around vehicle body, suspension system, and wheels are the sources of external loads. Power train, mass of body of vehicles, passengers and baggage cause internal loads on chassis. Off road vehicles have chassis structure separated from body whereas passenger vehicles have chassis integrated in body. Structural stiffness is an important factor in vibratory behavior of the body. When other structural requirements are achieved it is not difficult to reach acceptable values in case of small and medium size vehicles.

Figure 1 Cracks occurs in Chassis

We identify the failed chassis as shown in picture, this chassis failed closed to leaf spring. No. of such chassis failed in real time applications.

II.RELATED WORKS

Marco Cavazzuti et.al (2010)[1], provides applicability of methodology to obtain general thickness distribution and truss layouts. Model shows remarkable reduction in weight comparison with earlier chassis. These results are achieved by using

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"Generation of Renewable Energy by Installing Hydropower Plant at Dam"

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Abstract: *Sources of power generation range from various conventional sources such as coal, lignite, natural gas, oil, hydro and nuclear power to viable non-conventional sources such as wind, solar, and agricultural and domestic waste Hydropower electricity generation is considered one of the cheapest and ecofriendly technologies regarding electricity generation costs, and it is the most traditional, clean, renewable energy source. Electricity demand in the country has increased rapidly and is expected to rise further in the coming years to come. In order to meet and fulfill the increasing demand for electricity in the country, massive and mega addition to the installed generating capacity is required Indian infrastructure is recently growing at faster rates to meet present need and requirement of the county with the help of the state of art technology However, considering the environmental advantages offered by hydropower, they have also can have some disadvantages and consequences in the environment affecting water quality and disrupting river ecology. We investigated the costing of the hydropower electricity generation and impact of the hydropower electricity to minimize the cost of water distribution to the consumers.*

Keywords: - *Hydropower electricity, Renewable, energy, Water power ,infrastructure development, cost optimization,*

1.INTRODUCTION

Energy is the basic necessity for development of any country. Electricity is one of the most important blessings that science has given to mankind. It has also become a part and parcel of modern life style and no one can think of a world without it. Electricity has many uses in our day to day life. It is used for lighting rooms, running fans and domestic appliances like using electric stoves, Air conditioner, hair drier, washing machine, mixture grinder and more. All these provide comfort to people and same time as compare to conventional methods. In factories and industries, large machines are worked with the help of electricity. Most of essential items like food, cloth, paper, metal furniture's and many other things are the product of electricity.

Conservation of electricity is more essential due to the concern for fast depletion of non-renewable sources of energy in the country. Conservation of electricity necessary to save the environment and the Earth from warming. Considering the prevailing situation, it is the responsibility of society to look at the problem more seriously and make attempts to ensure proper and judicious use of electricity. We cannot afford to waste electricity at all. Switching off electricity when not needed, maximum use of natural light and air, use of energy efficient equipment's of correct size, refurbishing of electricity gadgets and motors in operation, etc. are some of the simple methods, which save electricity. Educating the general public on the methods of conservation of electricity and possibilities of spending less on electricity can go a long way in reducing electricity requirements. It will be a contribution of both the power distribution utility and its consumers for a better tomorrow.

The electricity is generated by various sources as per arability like thermal power, wind power, solar

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Automated Solid Waste Management System for Under Developing Cities (A case study for Karanjade Region)

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Abstract – *India's current population is approximately 1.4 billion and it is going to increase rapidly over the next few decades. Due to the ever-increasing population and urbanization, the volume of municipal solid waste (MSW) generation has also increased in the past few years. Improper municipal solid waste management possess a risk not only for human health but also to the environment. Hence, municipalities face a significant challenge for solid waste management. Karanjade is a newly developing area hence the Panvel municipal corporation is trying to make it a smart city and provide smart solutions to its residents. Therefore, traditional waste management systems are replaced with super technology automated waste collection systems. This case study focuses on the collection of solid waste at two parameters: the first part of collection is using an IoT system for an already developed region which also incorporates route optimization and the second part of collection is using a pneumatic waste collection system for newly developing region. The other significant advantage of this automated waste collection system is that the solid waste is segregated at the source of origin which lessens the burden of the laborers working at the transfer station.*

Key Words: **Smart cities, Solid waste management, IoT system, Route optimization, Pneumatic waste collection system.**

1.INTRODUCTION

Solid waste is the undesirable or useless solid substances generated from human sports in residential, industrial, or commercial areas. In developing countries like India, the municipal solid waste generation has greatly accelerated due to increasing population, urbanization, thriving economy, the standard of living, careless attitude of citizens. According to the "Swachhata Sandesh Newsletter" by the MoHUA, as of January 2020, 147,613 metric tonnes (MT) of solid waste is generated consistent with day. Per capita waste generation in major Indian cities ranges from 0.2 Kg to 0.6 Kg. Hence municipalities are under tremendous pressure for providing effective and efficient waste management to the citizens. smart cities must provide smart solutions hence conventional waste collection systems are being replaced by modern automated waste collection systems. Automation systems are more efficient and productive, which in turn reduces the consumption of labor, resources, energy, time, and cost of operation, hence it shows supremacy over the conventional systems. Studies have shown that the generation of MSW has rapidly increased in the last decade as compared to its previous decade. In India only 23% of waste is undergoing treatment and the remaining 77% of waste is just dumped in landfills. Due to open dumping at such a humongous rate, India faces severe environmental and health hazards. Leachate generation from landfills causes air and water pollution which not only affects aquatic life but also the quality of vegetation. Since Karanjade, Panvel is a newly developing region, this case study intends to propose a study methodology for the management of solid waste using a combination of low-cost IoT technology and a Pneumatic Waste Collection System.

2. SITE DATA

Karanjade is situated in Panvel, Raigad District, Maharashtra. The entire region is divided into 6 sectors. Sectors 1, 2, 3 are situated near the newly constructing Navi Mumbai International Airport and it is underdeveloped as of now. Whereas sectors 4, 5, 6 forms the developed settlement. The population in Karanjade is approximately 4000.

2.1 SITE DETAILS

Table -1: Site Details

Location	Sectors 1-6, Karanjade, Panvel, Raigad District, Maharashtra.
Governing Authority	CIDCO
Area	2.38 square km
Distance from nearest railway station	Approximately 4 km from Panvel Railway Station

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Applications of 5D CAD for Billing in Construction using GIS

Pranav Andhyal, Karthik Nagarajan, Raju Narwade

Abstract: A Construction project involves project management and financial planning at various stages right from the concept stage to the execution stage. This involves a large number of people working on different aspects of the project adhering to their specific job roles in collaboration with the others. These members not only work on the different aspects but also work on different software's and platforms in order to create a holistic working plan to ensure timely and flawless construction activities. But these software's only provide specific information related to it. A single program which would provide information of all these software's collectively on one platform would not only make it convenient for sharing data but also help in reducing the delay and eliminating errors. A 5D model can be created linking the schedule of the project and the cost involved in it to the drawings on a GIS platform. In this research a 5D model of a Residential cum Commercial project Located in Prabhadevi, Mumbai, Maharashtra, India has been generated. This model includes the data related to the Schedule and Cost of the project, which can help in making decisions related to monetary aspects, Man & Material preparedness, verification of bills & Billing Audits. A 5D model holds Spatial data such as Project Schedule, Itemized Element costs and Quantities along with the 3D model of the structure. The conclusion of the study states that a GIS Model can serve as a real time data base for all the parties involved in the project at every level of its progression.

Keywords: CAD, Project Management, Billing, GIS, 5D Model.

I. INTRODUCTION

The most important industry in the development of a nation is the construction industry, may it be Infrastructure or Real Estate. The construction industry is recognized as the second largest employer in our country. Hence it becomes very important for the industry to function uninterruptedly at every level. For any project to be successful it is mandatory to be planned in detail with respect to execution and also monetary aspects. These factors eventually lead to optimum utility of time and manpower of the agencies involved. Which is also the main objective of every management to avoid failure of the project cycle and identify problems and deviations from the specifics well in time and take necessary actions. All this can be done by collecting real time data from the team and ensuring synchronized efforts towards a common goal.

A. Existing Scenario

A construction project involves addressing a number of activities and achieving the targets as per the pre-planned schedule. Along with it the stages of planning the finances of a project also play a key role in maintaining the constant progress of the project. This involves primarily the management of cash flow and the timely payment to the contractors and vendors. In general practice this is done by making lengthy calculation of the quantities of material and its cost of procurement and installation. But this alone is not enough as the spatial and nonspatial information are not unified in a single system. Thus, to achieve this construction industry needs a constant effort towards developing effective mechanism. There is a need for a single platform for all spatial and nonspatial data for efficient financial planning. Due to recent advancements we can now generate a 3D model of the project and link the project schedule to create a 4D model in GIS and going further we can also link the cost aspect related to it to make it a 5D model. This provides a virtual model of the project and also the relevant time and cost aspects are easy to access and understand on a single platform.

B. Application of GIS for Billing in Construction

Geographical Information System- GIS is a layered system wherein the data is captures, stored and analyzed & Construction Billing involves verifying of the constructed element with respect to the CAD drawings, Item specifications, rates and certifying the claimed amount with necessary corrections. Due to advancement in GIS it can become easy to imbibe all this data in a single data base along with a 3D model generated using CAD reducing the time taken for the process saving on the precious man hours. Recent GIS development can be used to verify the data in accordance to the claimed bills by the contractor and certifying the same, also identifying and correcting any errors in final claims. Identify the deviation from the pre-determined specifications and its cost impact. It also ca be used for Billing audits, and reverifications. Not only this but the execution and project planning teams often unaware of the cost impacts of the tasks can also be aware of the cost implications of the activities undertaken by them.

C. 5D GIS model

A GIS system can be used to store project relevant information and can be modified whenever necessary.

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Research Article

Automatic Urban Road Extraction from High Resolution Satellite Data Using Object Based Image Analysis: A Fuzzy Classification Approach

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ABSTRACT

In the present world with a severe economic crisis, time and cost are the most crucial factors for any project. Civil engineering is a field of site execution where activities need an ample of time for its completion due to many factors and any contagious pandemic situation like Covid-19 makes difficult to perform the onsite operations. Hence adopting satellite data for planning purpose where required features can be automatically extracted and analyzed in any GIS software, is significant. This paper aims at the extraction of road features from high-resolution satellite data employing fuzzy classification technique. Worldview-2 satellite data of Gandhi nagar, the capital city of Gujarat, India having 0.5 m panchromatic and 2 m multispectral resolution, is used. Image fusion is carried out by using the Brovey sampling technique of Principal Component Analysis to obtain 0.5 m multiresolution pan-sharpened satellite image. Road feature is extracted by performing multiresolution image segmentation and developing a rule set for classification by adopting the object-based image analysis method. Its accuracy assessment attains the completeness of 71.65%, correctness of 70.33% and quality of 59.98%. This method provides a rapid novel approach for feature extraction with comparatively less data availability as no sun illumination divergence or thematic knowledge or altitude information are used, leading to pandemic suitable remote accessibility and cost-effective approach.

Keywords: Feature extraction; OBIA; Road; Segmentation; Fuzzy classification; eCognition

INTRODUCTION

Computing power and technology applications have seen a rapid advancement over the last decade. The continuously evolving field of remote sensing has proposed many challenges for technology used in various policies and scientific approaches. The stream of digital image processing has improved its feature extraction ability significantly in recent times due to development in different computer technologies [1]. Application of these techniques and technologies in various fields is a challenging task. Several approaches and technologies like crowd sourcing, GIS, remote sensing, surveying and more are used within different attributes. Availability of high-resolution multispectral satellite imagery has made feasible to explore more information by processing and generating enhanced features on the earth surface [2]. Feature extraction is a method of extracting meaningful information which has its applications in traffic surveillance, geographical survey, medical imaging, object recognition and remote sensing [3]. Classification and feature extraction from satellite data are skilled applications of remotely sensed data evoking the need for automation. Civil engineering trade has been actively trying to utilize remotely sensed data [4] that can prove as time-saver techniques like automatic features extraction from available high-resolution satellite data. Urbanization is one of the most distinct anthropogenic land transitions of the present age [5]. Changes in the urban environment enforce updating of the old record, which can help planners to have precise building zones for urban planning, maintenance and development [6]. The remote sensing

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Optimisation of Cost in Ground Improvement for Upcoming Navi Mumbai International Airport

M. P. Suryawanshi, Raju Narwade, Karthik Nagrajan

Abstract: This study aimed to optimise the cost of ground improvement by considering the residual settlement in marshy lands for development of new International airport by applying the appropriate treatment to overcome the issues that meets cost and time. Globally the increasing demands of trading and servicing activities require the development of an International airport in major cities. The Mumbai is one of the biggest commercial destinations of our country also necessitates the development of another airport besides the existing airport in the region. From the past few decades, researches and studies show various ways of ground improvements for the airport area in coastal regions. This study shows the cost optimization of ground improvement work by adopting the end on dumping of locally available blasted rocks instead of ground improvement techniques. This study works on principle that stone is puncturing to the very soft to soft clay and at the same time clay are getting displaced thus, effective thickness of clay is getting reduced. The objectives of this study are to optimize the cost of ground improvement and reduce the residual settlement of airport land in coastal regions. Adopting of end on dumping methods is appropriate in view of cost and feasibility of site than the ground improvement techniques. The cost of end on dumping is Thirty-six percent less than the stone columns technique. It can be concluded that for future ground development projects filling of stones by the end of the dumping method can be considered as the appropriate solution concerning time and cost.

Keywords: Ground Improvement, end on dumping method, Bore logs data, stone columns, Navi Mumbai International Airport.

I. INTRODUCTION

Considering free connectivity, functioning suitability and bare minimum disturbances to population, ease of use of land, accessibility, and ease of use of physical & social infrastructure Navi Mumbai site has been selected for the proposed Airport. Since the proposed airport is to be built on marshy land having zero or below zero ground elevation with respect to mean sea level,

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it is necessary to improve the ground stability by providing ground improvement measures according to site condition and soil investigations. Upon the soil investigations, ground improvement is to be done by filling of locally available blasted rocks by using the end on dumping method. Cost of end on dumping is tune-up to Rs.19575/Sqm while in a stone column it is about Rs.30883/Sqm for particular site area of Navi Mumbai International Airport which comprising soft clay up to 4.5 to 5-meter Fig.05 shows boreholes locations taking for detail soil investigation within the site area and Table No. 01 shows the test results obtained during soli investigation. As the clay is very soft to soft, the stones are puncturing to the very soft to soft clay and at the same time clay is getting displaced. Thus, the effective thickness of clay is getting reduced Fig.07 shows reduction in clay thickness and Table 02 shows the test results obtained after reclamation. Providing stone columns for shallow depth of very soft to soft clay is not advisable.

II. OBJECTIVES

Following are some of the other objectives that have been dealt with in the research work.

i. To improve the ground stability by providing ground improvement measures to ascertain the no residual settlement of ground.

ii. To optimize the cost of ground improvement by using end on dumping of locally available material i.e Blasted rock.

iii. Soil investigation and interpretation of test results for further studies and applications.

III. LITERATURE REVIEW

Masaki Kitazume (2015) was studied various ground improvements techniques like vertical drain, preloading, etc. used at Haneda/Tokyo Airport. At this airport the sub soil was found as very soft too soft in nature and having low shear strength. This airport is first and one of the major airport in the Japan having 300 m long runway which in operation. This airport is expanded frequently and now having three runways and two terminal buildings on manmade island. To cater the increasing air transportation fourth runway was constructed along south side of existing airfield in 2010.

Yang Yu, Zhu Wang and HongYue Sun(2020) were studied about the design of stone column .In this study it is mentioned that stone columns are broadly used to strengthen the soft clay foundation struts.

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Pressure based Air Purification Lamp for Multifunctioning Purpose

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Abstract - *Environmental and social issues such as air pollution, flooding and energy crisis have been very prominent in recent years. Studies in the past have attempted to provide solutions distinctively for each problem. Though none of them have approached the issues altogether, to create a 'one stop solution'. There is a need to design a hybrid system which can combine various measures so that the outcome is generated simultaneously in real time. Roads are the epicenter of air pollution, water logging, crimes as well as an ideal point for generation of green energy. The designed module consists of air filter, water level monitor, piezoelectric plates and voice recognition unit. These units are interfaced with computing devices like arduino and raspberry pi. The output is recorded in a centralized system, analyzed and displayed on LCD display. The designed flood level monitor successfully detected the level of water and warned when it was raised beyond safe limit (4 cm in the experimental testing). outcomes obtained on implementation of this system, are satisfactory when tested at urban as well as rural sites. Therefore, based on the proposed work, a regulatory and managing framework can be incorporated in the government for the betterment of people. In future, various dimensions of this study can be specialized to serve different sectors of society.*

Key Words: arduino, hybrid system, piezoelectric plates, raspberry pi, voice recognition

1. INTRODUCTION

Environmental pollution is the contamination of the natural environment which is detrimental to human health and the planet as a whole. Air pollution is the superior form of pollution which is referred as the release of pollutants into the air where annually 2 to 4.1 million deaths occur due to it. Industrial revolution is the main cause of air pollution as they release harmful gases by burning of fossil fuels that emits gases and chemical into the air. Air pollution not only contributes to climate change it shows exacerbation in the surrounding and affect human health by destroying the lungs and damaging the heart and brain with additional respiratory diseases.

Smog and soot are the two prevalent types of air pollution which occurs from emissions of combusting fossil fuels that react with sunlight. Soot (particulate matter) is made up of micro particles in the form of soil, dust, smoke, chemicals, dust or in the form of gas that are carried in the air. Particulate matter is especially dangerous because they penetrate the lungs and worsen bronchitis which lead to heart attacks or even death.

The main motive behind this designed module is to observe the changes occurring in the environment and making an attempt to lessen the pollutants from environment from its roots itself using the existing smart components.

Air pollution can be referred as emission of the harmful contaminants and foreign substances into the atmosphere irrespective of indoors or outdoors. It can be classified as visible or invisible air pollution. The ozone layer is the crucial layer of existence of ecosystem is depleting due to increase in air pollution. Various causes of air pollution are burning of fossil fuels, agricultural activities, exhaust from factories and industries, mining operations, indoor air pollution which affects the ecosystems in terms of respiratory and heart issues. Global warming, acid rain, eutrophication, effect on wildlife, depletion of ozone layer. Pollutants including sulphur dioxide (SO2),nitrogen oxides (NO2) and ozone (O3), particulate matter, carbon monoxide (CO) and volatile organic compounds (VOCs) are the major gases affecting the environment. Carbon dioxide (CO2) and other greenhouse gases like methane, nitrous oxide, etc are separately compared in the world data. The WHO emphasises that air pollution attributes to 9% of deaths globally and eventually shows longer-term threats to the environment viz climate change that may continue in the future. Around 4.3 million outdoor pollution and 2.6 from indoor has been a reason to 7 million premature deaths every year. The EPA, environmental protection agency is cognizant of all the means and techniques the industries use to dump their wastes which lead to introduce use strict protocols and testing methods against these invalid ways to protect the population. They are also measuring the air pollution emitted by vehicles and invented regulatory measures which the help of centres for disease control (CDC) they monitor pollen issues and use solutions to reduce pollen in the atmosphere.

In India, especially in the urban areas, we witness overflowing roads hampering the flow of traffic during every monsoon. No matter how efficient the drainage system is present in the city, due to flash-floods, a considerable depth of water is observed on roads, which is not suitable for the movement of traffic. Lack of judgment of the depth of water by the pedestrians and the drivers has led to many accidents.

Only if we could come to know the depth of water at various cross sections of the road with certain intervals, the traffic can be managed safely over that part of the road. For that a manually operating instrument (such as Measurement Rod) will not be viable considering no. of

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Investigation on Performance of Bacterial Concrete Amended by Metakaolin as Supplementary Cementitious Material

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Abstract - *A typical durability related problem in many concrete constructions is crack formation. While larger crack disturbs the structural integrity, smaller micro cracks may result in creating durability problems. Chemicals which are harmful causes premature degradation of matrix along with corrosion of embedded steel. As regular maintenance and repair of concrete structures are costly affairs, introduction of self-healing repair mechanism proves high beneficial as it reduces maintenance cost and increase durability of structures. Concrete shows some self-healing property i.e the ability to heal or seal freshly formed micro cracks. This characteristic is mainly because of presence of non-hydrated excess cement particles in the matrix, which undergo delayed or secondary hydration upon reaction with ingress water. In this experimental investigation a concrete partially replacing cement with Metakaolin and having self-healing property is developed. A concrete having cement partially replaced by 10%, 15%, 20 % of metakaolin with addition of bacterial solution of 5 %, 10 %, 15%, 20% along with all the key ingredient is prepared and tested. This research focuses on producing high strength concrete by investigating on the strength parameters and self-healing property of bio-concrete and the best combination having optimum dosage of bacterial solution and optimum amount of metakaolin for production high strength concrete is suggested.*

Key Words: **Bacillus Bacteria, Self-Healing Concrete, Metakaolin, Rapid Chloride Penetration test, Ultra Sonic Pulse velocity test.**

1. INTRODUCTION

Main ingredients of concrete contain cement, aggregates, water and admixtures (whenever necessary). Production of cement has a very severe impact on environment due to the carbon dioxide (CO_2) emission [22]. Along with energy consumption for production and transportations, several other problems like air pollutions, impacts on landscape etc are also matter of concern. A need to increase service life of concrete structure by not only using good material but also by sustainable material is generated. Concrete structures are susceptible to cracking which allows water and damaging chemicals to enter and degrade the concrete, reducing the durability of structure as well as requiring costly maintenance and repairs. Formation of cracks cannot be avoided. Cracks which are bigger in size damages structures integrity and it require repairs actions while smaller size cracks having crack width smaller than 0.2 mm are considered problematic [11-12]. Such micro cracks do not affect the strength properties of structures but on the other hand makes the structure porous and permeable providing path for ingression of environment moisture. Harmful chemicals like chlorides, sulphates and acids results in degradation of concrete matrix along with premature corrosion of steel reinforcement, damaging structures durability thus reducing its life span. To overcome this issue use of suitable bacteria as a healing agent was explored. In this spore of specific alkaline resistant bacteria of genus bacillus were added to the concrete mix as a self-healing agent. These spores after activation produce copious amount of crack filling calcium carbonates-based minerals which heals the cracks [8]. In this experimental investigation, the effects of adding bacteria into the concrete mixture with partial replacement of cement with metakaolin is carried out. The results are analyzed and the optimum dosage of bacterial solution and metakaolin is suggested.

2. METHODOLOGY

The main reasons for failure of the structure are cracks. In present experimental research work, an alternative self-repair method to arrest the cracks by using bacteria is adopted. To achieve the objectives of the research the following tasks are performed:

1. The materials are collected from a specific location and properties are studied.
2. Prepare the design mix of M60 grade by using bacterial solution (5 %, 10 %, 15 %, 20 %) with partially replacement of cement by (10 %, 15 %, 20 %) of Metakaolin.
3. Cubes are casted and compressive strength test; ultra-sonic pulse velocity test and Rapid chloride penetration test were performed on 7, 28 and 56 days.
4. Results were analysis and conclusion are drawn.

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Self-Compacting Concrete using Superplasticizers – A Review

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Abstract - *The Concrete is a hard building material which is made up of cement, fine aggregates, coarse aggregates and water in a permissible quantity. Due to its properties such as high strength, adaptability to different forms, fire resisting capacity, low cost etc., concrete has got wide acceptance nowadays in the field of construction sector. In nowadays, infrastructure developments such as multistoreyed buildings, bridges, airports etc. are increasing widely all over the world. In the cases of huge construction areas, longer span, lack of proper compaction, lack of labours, concreting dense reinforcements, a special concrete has higher importance in construction industries. This review paper focused on the effect of superplasticizers on self compacting concrete as a guideline for the further research work by analyzing different studies.*

Key Words: Self-Compacting Concrete, Superplasticizers, Admixtures, Workability, Strength, Durability

1.INTRODUCTION

Self-compacting concrete (SCC) is an special concrete that require no vibration during placing and compaction. It is the concrete that able to flow under its self weight, or under gravity. It is completely fills formwork and achieve full compaction, even in the presence of congested reinforcement. The hardened concrete is dense and homogeneous. It has the same engineering properties and durability as traditional vibrated concrete. For the improvement of concrete properties, modifications are done from the time of invention of concrete. Concretes can be modified either by the replacements of any material or by the extra addition of new materials. Admixtures are available in mineral form or chemical form. Many researches were conducted for determining the effect of superplasticizers and admixtures.

2. OBJECTIVE

Main objective of conducting the research is to finding out the most effective, easily available superplasticizer that can be used for imparting self compacting property and can improve the quality in performances.

3. LITERATURE REVIEW

Hajime Okamura[4] et.al (2003) discussed about technique for attaining self- compactability, self - compactability factors. They proposed a mix design method for SCC based on paste and mortar studies for super plasticizer compatibility followed by trial mixes. However, it was more relevant to test for passing ability, filling ability, and flow ability and segregation resistance.

Burak Felekoglu [2] et.al (2007) discussed about three synthetic PC-based superplasticizers were synthesized by using radical polymerisation techniques. The effect of superplasticizers on setting time, workability of SCC and strength development of SCCs were studied. Along with the usage of superplasticizer, it is observed that, W/C ratio were also has greater importance in imparting the workability retention. The mix with 2.3 wt % of P3 type SP performs better results. However, some longer setting times and early strength reduction should also be expected.

Evangeline K [5] et.al (2011) studied about the effect of 3 types of superplasticizers such as Sulphonated Naphthalene Formal-dehyde (SNF), Poly Carboxylate Ether (PCE) and Modified Poly Carboxylate Ether (MPCE) on mechanical properties and workability of self compacting concrete. From the comparative study, it is observed that, with the concrete, both the PCE and MPCE showed better results. The workability retention of concrete with PCE does a longer time workability for concrete. Also, the concrete using MPCE give a better workability for a longer time. Hence, MPCE performed as a better superplasticizer than the three selected superplasticizers considered in the study, considering characteristic behaviour of fresh and hardened concrete and economy point of view.

C. Parra[3] et.al (2011) discussed the hardened properties like splitting tensile strength, modulus of elasticity and Mercury Intrusion Porosimetry (MIP) test of self-compacting concrete. Based on the test results, the splitting tensile strength of the SCC prepared with limestone filler is on average 15% less than that of Normally-Vibrated Concretes (NVC). From the point of view of deformability, the behaviour of SCCs is very similar to that of NVCs. Also, it was found that adding limestone filler produces a greater particle packing, the SCC's porous structure is finer than that of the NVCs, which explains the greater stiffness of the paste in the SCCs.

Rafat Siddique [11] (2011) studied the properties of self-compacting concrete made with five percentages of class F fly ash ranging from 15% to 35%. In this paper, self-compactability parameters of SCC, strength properties and durability properties were investigated. The carbonation depth increased with the increase in age from 90 days to 365 days in all the SCC mixes and maximum carbonation depth

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"A Review on Implementation of Bacillus Bacteria for Restoration of Damaged Concrete"

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Abstract: *Concrete use is growing rapidly across the globe and thus the production of concrete is useful for environment bases also. Concrete is prepared in very less time when it comes into water contact, Autonomous cure for concrete cracks. In this work we examined the bacteria's capacity to act as a concrete self-healing agent, i.e. their ability to patch cracks that occur. For this reason, a particular group of concrete is very useful for construction purposes. Bacterial spores applied directly to the mixture of cement pastes are used on a monthly basis. A persistent low in the diameter of the pore during cement stone setting possibly restricted the spore lifespan, the typical size of Bacillus spores. Nevertheless, because Bacterial cement stone cases appeared to develop considerably more crack-plugging minerals than control specimens, and the possible use of bacterial spores as a self-healing agent seems encouraging. This work is about concrete performance with bacterial concrete and how it improves its mechanical properties.*

Keywords: *- Concrete, Bacillus Bacteria, Self-Healing Concrete*

1. INTRODUCTION

The greatest recognized species of the Bacillus, B. Megaterium is roughly 1.5 µm long (micrometers; 1 µm = 10−6 m). Bacillus also occurs within chains. In 1877 the German Scientist gave an Authoritative description of two forms of hay bacillus (now called Bacillus isubtilis): One that could be destroyed during heat exposure, and one that was heat resistant. He named "spores" (endospores) under adverse environmental conditions All Bacillus species can produce lethargic spores. These endospores will continue to be reasonable for extended periods of time. Endospores are heat, synthetic concoctions, and day light safe, and generally circulate in nature, mainly in soil from which residue particles are attacked.

Cement (Portland clinker) Development alone is expected to contribute 7% to the world's anthropogenic CO2 emissions, owing in particular to the sintering to calcareous and clay at temperature 1500 ° C, as calcium carbonate (CaCO3) is converted to calcium oxide (CaO) during this process while releasing CO2. Nonetheless concrete does not seem to be a safe substance from an environmental point of view (Gerilla et al., 2007).

2. HISTORY

The idea of self-healing concrete was first developed in the early 1990s. The concept branched from the idea that concrete without admixtures or biological healing agents is capable of healing itself. This process occurs very slowly and not to the extent needed to recover water-tightness. Researchers began testing ways to speed up the process. The first to seriously consider the idea. She proposed including glass capsules in the concrete that contained methyl methacrylate glue that would be released when the capsules were broken. However, the glue was too viscous to flow fast enough to fill cracks and the glass capsules would not survive the concrete mixing process. Others have tried healing mediums in concrete such as polymers, gels, clays, waxes, and films to varying degrees of success. In the mid-2000s, Jonkers and Schlangen began to research encapsulated bacteria as a biological healing agent. All these proposed methods had the same idea, as described by Patel: "The trick to making self-repairing concrete is to heal microscopic fissures before they become large cracks". After success in the lab, Jonkers

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Vehicle antitheft mechanism using IoT

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ABSTRACT

Standard of living has made vehicles an integral part of our life. Vehicles are not just used for transportation but they are used for commuting. Vehicles provide comfort, fast and hassle-free journey but at the same time, lack of parking spaces, and absence of effective antitheft architecture make this commuting an irksome task. The proposed work aims to build an effective antitheft system for vehicles using the existing infrastructure. Design modifications are not required for vehicles, so this system has backward compatibility and all old vehicles can be a part of this system with an addition of the proposed device. It also emphasizes all the aspects that make commuting a laborious job and provides appropriate solutions to make the journey safe, and reliable. This system emphasizes the fact that existing transportation infrastructure such as check posts, and toll plazas should be used for the implementation of the Internet of Things (IoT). An affordable IoT device is set up on the said infrastructure and also in the existing vehicles. The proposed system covers two aspects – the primary aspect of automated registration of new vehicles on registration booths or when it passes through the check post for the first time and the other important aspect is making the vehicle theft-proof. So, if one realizes that vehicle is stolen, in real-time, the complaint can be registered and the Vehicle can be stopped at the check post, all events being automated with the help of IoT.

Selection and peer-review under responsibility of the scientific committee of the 3rd International Conference on "Advancement in Nanoelectronics and Communication Technologies".

1. Introduction

Nowadays automobiles have become an essential part of one's life. In the past decade, with the increase in the standard of living, the number of vehicles bought has rapidly increased. This increase in vehicle purchasing has brought about an increase in the theft of vehicles. But not all vehicles are equipped with the inbuilt antitheft system, at the same time not every-one is capable of purchasing a vehicle with the antitheft system. There is one more concern i.e., parking space for the vehicles is limited. So, people park their vehicles anywhere on the campus. Hence, vehicle theft is one of the big issues nowadays. Due to the heavy burden of managing parked vehicles, this issue has increased with the increase in the number of private vehicles available. Traditionally when vehicle theft occurs, people blame the concerned authorities but seldom think about their workload. Some people enroll their complaints to the concerned authorities but not every time people get their vehicle returned back. According to a survey, the vehicle recovery rate is low. Antitheft systems are those systems that prevent vehicle robbery as well as provide vehicle tracking facilities. By comparing the existing technologies, automobile manufacturers are implementing new antitheft technologies by improving some of the features of previous techniques. They are attempting to increase the efficiency of the vehicle by adopting new antitheft techniques. With increasing advanced technologies, nefarious attackers are also adopting advanced tools and techniques to theft the vehicle. There are lots of techniques developed but still, there is no foolproof plan for the safety of a vehicle. Basically, traditional vehicle antitheft technologies were mainly based on non-biometric mainly GPS-GSM modules, and biometric technology, and some of the method uses social networks to grab the theft vehicle. Chakradhar et al. proposed a vehicle anti-theft system for automobiles by using the mobile application. Basically, it has an android application that provides two buttons on the screen to check the status as well as to ignore the alert. Thus, this system can substitute the default inbuilt lock system of the vehicle. But to work, it requires a mobile network otherwise system will not be useful in absence of a network [1]. Abdulrahaman et al. designed a web-based information system

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Dematerializing Vehicle Documents with IoT—Effective Solution Using Existing Infrastructure

Namrata Thorve & Mansi Subhedar

Conference paper | First Online: 15 May 2022

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1424)

Abstract

Identification, safety and impact of vehicle on the surroundings depend upon the vehicle documents like its license, PUC, RC book, insurance papers, etc. This work aims to build a system for dematerialization of vehicle documents using IoT infrastructure. This system will make that all the documents are available with us all the time and are stored securely. Also, the documents can be checked for renewals and notification can be sent to the concerned departments and the end user. Implementation of proposed work in vehicles does not need substantial modifications in the vehicles. An IoT device can be fitted with vehicles to acquire backward compatibility. Other notable feature of proposed method is that an IoT infrastructure is built introducing IoT devices in existing toll plazas and check posts which makes the work feasible, affordable and sustainable. Developed Web site architecture in this work helps to communicate the end user with all the concerned departments as well as helps the IoT devices to communicate with the IoT infrastructure using the databases and works on the principle of API endpoints.

Keywords

IoT | Vehicle dematerialization | ASP.NET Core | API end points

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Certificate of Presentation

This certificate is presented to **Dr. Mansi Subhedar** of **Pillai HOC College of Engineering and Technology** for the oral and technical presentation of the paper ***"Adaptive Traffic Signal Control Using Deep Learning Techniques"*** at the International Conference on **IoT & Blockchain Technology for Smart Cities & Societies** in the **64th Annual IETE Convention** organized jointly by IETE Headquarters and IETE Kolkata Centre on September 24th – 26th , 2021 in virtual mode.

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IOT Based Motor Speed Control and Temperature Measurement

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ABSTRACT: This project is mainly comprised of controlling equipments wirelessly. IOT based motor speed control and temperature measurement is basically a VFD circuit with temperature measurement circuit which can be controlled through mobile or through website on internet. For IOT, BLYNK APP and ESP8266 Wifi module with Arduino UNO is used. They controls Inverter circuit and sends feedback data to the controller. From this technique soft starting of motor can also be obtained. It is comprised of hardware and software. The frequency generation of VFD circuit is controlled by IOT devices through BLYNK APP. IOT devices are programmed using Arduijno IDE software. BLYNK APP controls Wfi module. Wifi module controls Arduino. Arduino gives PWM signal to optocoupler circuit. Optocoupler circuit is used for isolation between High voltage side devices and low voltage side devices. Optocoupler circuit gives output to gate driver circuit. Now gate driver circuit controls gate terminals of IGBT's of inverter. This is how frequency of inverter is controlled. For temperature measurement ESP8266 Wifi module is used and one temperature sensor is used. It senses the temperature and gives feedback to Wifi module. Wifi module gives data to BLYNK APP.

KEYWORDS: Arduino, Blynk App, Esp8266, PWM

I. INTRODUCTION

General purpose of motors are increasing widely in our surrounding from household equipments to machine tools in industrial applications. It is a necessary and indispensable source of power in many industries. In many applications the speed control plays a vital role which can be done using many control strategies. The purpose speed controller of a motor is to take signal representing the demanded speed and to drive a motor at that speed. Generally speed control of the motor can be done by varying the motor parameters of the induction motor such as current, voltage, frequency etc. this can be achieved by different methods such as field control method, armature control method etc.

In this project speed control is done by PWM (Pulse Width Modulation) technique and the parameters are monitored and displayed in LCD by and shared to mobile using IOT through node MCU which makes the whole system flexible and user friendly. With the help of IOT through node MCU the required speed is given as input to PWM through Arduino UNO thus varying the speed of induction motor. Present industry is increasingly shifting towards automation. Two principle components of today's industrial automations are programmable controllers. today there is a general tendency to develop an intelligent operation.

The objective of this project is to monitor and control, the speed of motor and also monitor temperature, and protect if the induction motor parameters such as voltage , current, temperature and speed are exceed above the normal value without using any sensor.

II. DESIGN METHODOLOGY

Methodology

The circuit of project is devided into mainly five sections there is nodeMCU, arduino UNO, gate driver circuit, opto-coupler circuit and three phase inverter. i.e There is the input stage that is composed of nodeMCU and

OVERALL PROTECTION OF INDUCTION MOTOR USING MICROCONTROLLER

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Abstract **-- Induction motors are widely utilized in industry due to their rigidity and speed-control flexibility. This paper tackles the matter of three-phase induction-motor overall protection using microcontroller protection algorithms. A stand-alone, microcontroller-based protector is designed and implemented. Many algorithms are developed to understand the different functions of the protector. Moreover, the induction motor electrical and thermal behavior are studied. The implemented protection system may be programmed to suit a large range of induction motor sizes, and to watch the motor parameters during its operation and after a fault occurrence through seven-segment display units. The relay protection functions that are considered during this implementation are overload, over-temperature, supply under-voltage, supply over-voltage, unbalance of supply-voltages, phase reversal, phase loss, heavy over-current, excess ground-current, unbalance of supply-currents, and repeated starting. The circuit will take the complete control of the motor and protect the motor from several faults such as over voltage and under voltage and therefore the circuit will activate the motor under safety conditions. This also protects induction motor from single phasing which is additionally a serious fault. The circuit was fully controlled by the microcontroller and also the microcontrollers will continuously monitor the voltages of the three phases and if the voltage goes abnormal then it turn off the motor until become normal.**

I. INTRODUCTION

There are a large range of a.c. motors and motor characteristics existing, due to the many duties that they used. All motors need protection, but fortunately, the more fundamental problems affecting the selection of protection are independent of the kind of motor and also the form of load to which it's connected. There are the protection of induction motors and synchronous motors, and these are fully handled in the appropriate section. Motor[1] characteristics must be carefully considered when applying protection; while this might be considered stating the plain, it emphasized because it applies more to motors than to other items of power grid plant. As an example, the starting and stalling currents/times must be known when applying overload protection, and furthermore the thermal withstand of the machine under balanced and unbalanced loading must be clearly defined. The conditions of motor protection[2] as required may be divided into two broad categories: imposed external conditions and internal faults provide details of all likely faults that need protection. It will be accepted that legitimately arranged, dimensioned, introduced, worked and well-kept drives ought to not separate. In actuality, be that it may, these conditions are barely ever perfect. The recurrence of diverse engine harm varies since it relies on upon distinctive particular working conditions. Measurements demonstrate that yearly down times of 0.5...4% must be normal. Most breakdowns are brought on by an over-burden. Protection shortcomings prompting earth issues, swing to-turn or twisting short-circuits are brought on by overabundance voltage or pollution by sogginess, oil, dust or chemicals.

II. LITERATURE SURVEY

A Microcontroller[5],[7] unit (MCU) uses microprocessor as its central processing unit (CPU) and it incorporates memory, Timing reference, I/O peripherals etc., on same chip. Limited computational capabilities and enhanced I/O are special features. In our project the microcontroller is employed to manage the three phase induction motor. The motor protection is required as day to day life induction motor usage increases plenty because it has some specific merits. The circuit was fully controlled by the microcontroller and therefore the micro controllers will continuously monitor the voltages of the three phases[3] and if the voltages goes abnormal then it cut the motor until they're normal. It will not only

Design & Development of Solar Educational Training Kit

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Abstract: **Ability of utilize free resources of energy to generate electricity is one of the major tasks for environmentally research engineers. Numerous researches have been conducted to convert sunlight to direct current through Photovoltaic (PV) system. Nowadays PV research has become a popular study and has gained attention of many engineers and researchers due to free application, improving efficiency and high reliable energy source availability and is predicted to grow in years to come. With understanding the importance. This paper proposes a model of a real time grid assisted from low power direct current to high power alternating current as a solar educational training kit for an early education process to understand about the sustainability of energy conversion process. Integrating the switching concept, grid connection will only be switched on if the stored energy in the battery is insufficient to energize or supply the training kit. In the nutshell, a simple and user friendly measurement training kit is intentionally designed for user's handwork purposes.**

Keywords: Solar educational kit, energy conversion, IV-characteristics, circuit implementation.

1.INTRODUCTION

The aim of this project is to implement an educational solar training kit to provide a practical platform for the students to experiment and hone their practical skills. As the demand of the electricity is growing dramatically, resources used to supply the electricity are not sufficient to satisfy the needs, the finite resources such as fuels, oils, coals, gases, are reducing critically and thus, the supplies of electricity is getting limited and the world is working hard to keep green. As a result, the ability of utilize free resources of energy to generate electricity is one of the major tasks for going green and so are to replacing the existing finite resources. The application of this is free, unlimited, efficient and reliable energy source . solar educational training kit for an early education exposure to understand about the sustainability of solar energy process. The module exposed the student about the principle of measuring voltage and current practically.

2.METHODOLOGY

2.1. Circuit Diagram

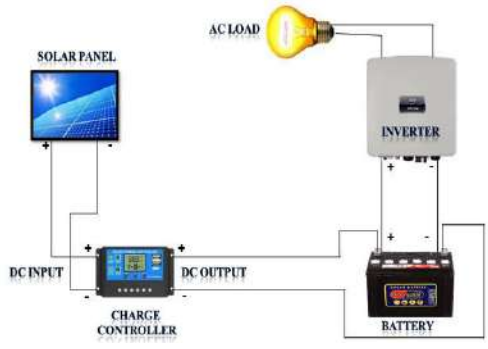

Fig.1: Solar conversion

2.2. Circuit Implementation

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Design and Implementation of Electric Bike

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***Abstract*— The primary objective of the project is to design a feasible yet highly adaptable E-bike.The aim of this project is to implement an electric bike as a cheaper alternative to a conventional combustion engine bike.The Electric bike is a bike which is driven with the help of battery which is coupled to electric motor.**

Index Terms—Electric Vehicle, Battery driven,controller.

I. INTRODUCTION

In the modern world of today where the population of people in the earth is in constant growth the demand for energy is drastically increasing. To meet these demands the need for a sustainable & reliable energy source arises, where the current sources are finite, limited & very harmful to the environment.

Taking considerations of recent events of meager resources and facilities at their disposal, over increasing traffic, snags problem of parking and the need to make automobile a more environmental friendly, designers of vehicles are back with a view to hit upon a novel concept that completely alter the conventional design.The Electric bike is a bike which is driven with the help of battery which is coupled to electric motor.

It works on the principle that the electromotive force of an A.C. motor which receives electrical energy stored in D.C. battery is converted with the help of D.C. to A.C. converter.The aim of this project is to implement an electric bike as a cheaper alternative to a conventional combustion engine bike.

II. LITERATUREREVIEW

[1] This was first developed in 1890's in US and those were documented within various US patents.

[2] On 31st Dec, 1895 Ogden Bolton designed a battery powered cycle

[3] .Couple of years later, Hosea W.Libbey invented electric bike which was propelled by double electric motor.

[4] Later in 1990's torque sensors and power controls were developed including some modified versions of bike with NiMH, NiCd and/or Li-ion batteries

III. COMPONENTS

A. BLDC Motor

A brushless DC motor is an electronically commuted DC motor which does not have brushes. The controller provides pulses of current to the motor windings which control the speed and torque of the synchronous motor. These types of motors are highly efficient in producing a large amount of torque over a vast speed range

B. Battery

The battery which uses sponge lead and lead peroxide for the conversion of the chemical energy into electrical power, such type of battery is called a lead acid battery. The lead acid battery is most commonly used in the power stations and substations because it has higher cell voltage and lower cost.We have used 12 V 7 Ah lead acid

Health Monitoring and Sanitizing Drone for Pandemic

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Abstract **- Due to the flexible application of drones, it is being used in our day-to-day life and has great demand in the market. They perform each task with good efficiency. The main objective of this project to design and develop a Health Monitoring and Sanitizing System for Pandemic. Temperature detection using a temperature gun is risky and unsafe. Sanitizing using hand pump methods is a tiring and time-consuming process. To overcome this problem, the health monitoring system will detect temperature without a human interface. The sanitizing system will sanitize the surface. The camera will capture the photos of sneezing or coughing action and notify the operator at the base station.**

Index Terms **- Covid-19, Pandemic, Drone, Camera, Health Monitoring, Sanitization.**

I.INTRODUCTION

Novel Corona Virus (SARS-CoV-2) or COVID-19 has brought complete life change in human society. WHO (World Health Organization), UNICEF, ICMR (Indian Council of Medical Research), etc. health organization are doing their level best to control the spread of the pandemic. Washing hands regularly, maintaining social distancing, sanitizing surfaces, regular health check-ups, etc. things are now part of our daily routine.

Volunteer checking human body temperature using a temperature gun is risky. The volunteer who is checking temperature may get infected if the volunteer comes into contact with the person who is already infected. So volunteers can become super spreaders. Also sanitizing using the hand pump technique is a too slow and tiring process. According to WHO's report, longer contact with surface sanitizer can bring serious health risks like Eye and skin irritation, Liver damage, Respiratory conditions, Central nervous system effects, Cardiac reaction, etc.

CCTV cameras have limitations in that they are stationary and they can't be moved automatically so they don't cover the footage that the operator desire. As our quadcopter has installed a camera module so it is flexible for the operator to get live footage of any place at the base station.

We have selected Quadcopter because of its durability and good weightlifting capacity. It can also lift about 3-4Kg weight easily. The health monitoring system is installed on the drone such that the operator can handle the drone from one fixed position or base station.

II. COPONENTS

A. Frame

This project is a quadcopter-based health monitoring system. In this project, we have used the Q450 frame. It is durable, light in weight, and can lift to 3-4 Kg material. It is made from lightweight materials like glass fiber and polyamide nylon hence its weight is just 330g. It has an integrated Power Distribution Board for direct soldering of ESCs.

B. Brushless DC Motors

To fly a quadcopter total 4 BLDC motors are required. A2212 motors provide good thrust. Each motor has a 1000kV rating and has a maximum weight of 53g without blades.

Fig.1 Frame

Fig. 2 Brushless DC Motor

Fig.3 APM 2.8

Fig.4 Li-Po Battery

Development & Real-time Analysis of Automotive Systems

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Abstract **- As the electric vehicle is coming to mainstream on the commercial vehicle, it is being used in our day-to-day life and has great demand in the market. The main objective of this project to design and develop a feedback control and automation system for the electric vehicle. The unknown small fault in the electric system can becomes major when it is not detected and cleared in early stages. For getting that thing fixed professional help is needed. To overcome this problem, we have introduced this system. The feedback system will detect fault and notify the user on the smartphone application.**

Index Terms **- Electric Vehicle, Smart Car, Vehicle Safety, Can Bus System.**

I.INTRODUCTION

The need for environmentally friendly technology has a significant impact on the automotive world. Fuel consumption in conventional vehicles gets attention from all over the world. So, the demand for environmentally friendly electric vehicles is becoming increasingly urgent. At present, a lot of research has been done on electric vehicles, especially research on battery design and performance.

When asking people on the street about their opinion on electric vehicles1 (EV), they will name beneficial aspects such as environmentally friendly, zero emissions (especially no CO2 emissions), low operating costs as no fossil fuel is needed and low noise emissions. However, humans are commonly reluctant towards technological changes such as the electrification of electric drivelines. Thus, drawbacks will be present in their minds as well, namely low range, long charging times, safety of the battery pack and high vehicle prices. A small failure of EVs' core components may result in a very costly breakdown or even a life safety threat. The focus is on typical faults of the electric drive and its control system.

II.LITERATURE REVIEW

1. Recent Development on Electric Vehicles - K.W.E CHENG
2. Faults and their influence on the dynamic behaviour of electric vehicles- Daniel Wanner
3. Online multi-fault detection and diagnosis for battery packs in electric vehicles Yongzhe Kang, Bin Duan, Zhongkai Zhou, Yunlong Shang, Chenghui Zhang
4. Summarize of Electric Vehicle Electric System Fault and Faulttolerant Technology Zhang Liwei Huang Xianjin, Yang Yannan, Xu Chen, Liu Jie

III. COMPONENTS

A. Arduino UNO

Arduino UNO is an open-source microcontroller board based on Microchip ATmega328P Microcontroller. This project requires three Arduino UNO boards. Separate Arduino is connected to each system. One for control system, second for automation system, and third one for automation system.

B. Bluetooth module

Bluetooth HC05 module is used for wireless, transparent communication. It is used for collecting the data from the Arduino and pass it to smartphone by using Bluetooth connection.

C. Battery

We have used 12 V 1.2 Ah lead acid battery for this project we can give our whole system about 30 min of run time.

Four Leg Spider Robot Using Arduino

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Abstract— In Nowadays, due to increasing advancement in technologies, bio- inspired robots are widely used and developed due to easy availability of electronic components and open source software at inexpensive cost. These robots are extremely useful for performing task in dynamic environment where normally performing task is very difficult, due to its flexibility and smooth interaction with environment. This project is also about a bio-inspired robot which is actually a four leg spider robot using Arduino nano. In this project, Arduino nano is the main component. Bluetooth module is used for controlling it with using remote control or android app. Micro servomotors are used for its movement acting as actuators. There are basically two programming codes used one for initializing servomotors positions and other for controlling its movement. 3D printed parts are used and assembled for its body. These robots are widely used for explorations and surveys in critical areas, space applications, medical fields and carrying loads.

Keywords: Spider Robot, Arduino

I. INTRODUCTION

Biological inspiration in robotics produced complex structures with sensory-motor coordination, in which learning is important for adaptation. In addition, rehabilitation robotics has produced new ideas and original human helping devices in the growing field of biomedical robotics.

Nowadays along with many advancements made in robotics, bio inspired robots are also made for flexible use in extreme environments. It comes in wide use due to its robust nature and suitability in unstructured and dynamic changing environment. These robots are becoming extremely important due to increasing complexities in technological demands. Bio inspired robots mimic both physical appearance and natural dynamics of biological movements resulting in robust and sharp robots. These robots are important for environments where dynamics, sensory processes and interactions with the surrounding environment are important.

The science and technology of rehabilitation robotics will progress through the collaboration among robotic researchers, medical doctors, and patients.

Fig. 1:

II. COMPONENTS REQUIREMENT

A. Arduino Nano:

Arduino Nano is a small, compatible, flexible and breadboard friendly Microcontroller board, developed by Arduino.cc in Italy, based on Atmega328p (Arduino Nano V3.x) / Atmega168 (Arduino Nano V3.x).It is similar to Arduino UNO due to same microcontroller, but quite in small size. It has an operating voltage of 5V and input voltage can vary from 7 to 12V.Arduino Nano Pinout has 14 digital pins, 8 analog Pins, 2 Reset Pins & 6 Power Pins. Each of these Digital & Analog Pins are designated with multiple functions but their main function is to be set as input or output. They act as input pins when they are interfaced with sensors, but with driving load then they act as output.

Fig. 2:

B. Bluetooth module HHC05:

HM-05 is a Bluetooth module designed for establishing short range wireless data communication between two microcontrollers or systems. The module works on Bluetooth 2.0 communication protocol and it can only act as a slave device. This is cheap and flexible method for wireless data transmission and it even can transmit files at speed up to 2.1Mb/s.HC-06 using frequency hopping spread spectrum technique (FHSS) to prevent interference with other devices and ensure full duplex transmission. This device works within frequency range from 2.402 GHz to 2.480GHz.

Fig. 3:

C. Printed Circuit Board/ Zero PCB:-

Printed circuit board is a flat, stiff and insulating material that has thin conducting structures sticking to one side. These conducting structures create geometric patterns of shapes

Responsive Smart Power Grid

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Abstract— *As we see, there is advancement in technology, there is an increase in the demand of electrical energy. It has become a great challenge for the production and distribution of the electrical energy. Due to this, we need power grids that are more sustainable, reliable and more efficient. This can be done by introducing "Smart grids" into the power system. This is a technique in which all the important features are enforced into the power grids so that they work in a smart way fulfilling our demands. Power systems are intricate and have significant importance in present day. They have great impacts on the economy, politics, social and some other aspects of modern life. These modern power systems are armed with a lot of different protection strategies to avoid outages and unexpected incidents, but still systems are facing faulty operations and urgent situations. Because of which the system may face cascading failures and natural circumstances. These can lead to blackouts. In this paper, evaluation on blackout and its solution is introduced. Different analysis methods of blackouts and the outcomes or effects of blackouts is examined.*

Keywords— Blackout, cascading events, smart grid, renewable energy

I. INTRODUCTION

The potential of power system to sustain the endurance and to secure constant flow of electrical energy from the system to the customers in any episodes of interference is important. As the power system is escalated over wide topographical area, the chances of occurrence of faults and failures is more.

If some events and failures which cannot be predicted occur, it leads to power failure and blackouts which have a great impact on modern life. Therefore, today's power systems must be armed with appropriate protection measures and control so as to reduce the disturbances.

Power system protection strategies are the ultimate combative to prevent the cascading episodes. This can be achieved by introducing important features into the existing power grids to make it work in a smart way. This technique of advancement of power grids is called as "Smart grid" technology.

Whenever there is a fault or a blackout large amount of time and energy is wasted in finding the fault and the location of the fault and then to operate it. This project mainly aims to reduce some time and effort of finding the location of blackout. The main purpose of this project is to reduce the time duration of outages and blackouts and faults to optimise the time and reliability of supply. The design of this project is to build an efficient system that will detect a locate faults in overhead lines such as line to line, line to ground faults. It will automatically indicate to the control room about the location of the fault occurred at the transmission line.

II. EXISTING SYSTEM

Our present grids are facing multiple challenges that are listed below:

1. First is about infrastructural problem, that is current grids are not interconnected with each other and current system is outdated as it is not fulfilling increasing demand of customers which ultimately leads to the blackout problem which are expensive for utilities especially since it is spreading rapidly due to lack of communication among the grade and the control room.

2. Next challenge is about location and detection of the fault as grids are not connected smartly to each other it is difficult task to find out exact location of fault and what type of fault has occurred.

3. Third challenge is about the flexibility of current grid, which is unable to support the development of renewable energy or other new technologies which will make the system more sustainable.

III. PROPOSED SYSTEM

Modern life is not possible without continuous supply of electricity so for continuous supply, monitoring and controlling of supply in smarter way is essential in today's life. The main purpose of the system is to detect and fix the problem of black out as soon as possible. Hence, we have introduced a responsive smart grid which is able to send SMS with the help of thingspeak cloud, ESP8266 and Twilio application. The main objective of the project is to remove the blackout as soon as possible. For that, we are using renewable energy and rerouting and restoring protocol of neighboring grid i.e sharing supply of neighboring girds to the grid where fault has occurred.

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SMART ENERGY METER FOR POWER THEFT IDENTIFICATION & POWER MONITORING USING RASPBERRY PI

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ABSTRACT
The magnetic attraction Energy meter reading systems universally have additional issues, like issues in construction, not twin means communications quickly and conjointly they do not offer data to the shoppers instantly. To resolve these issues, this paper is delineated to live unit consumption of the load utilized by the user by unendingly watching the facility usage in an exceedingly single day. The most objective of this paper is to eliminate human involvement in electricity maintenance. The unit consumption is measured exploiting wireless sensors and calculations square measure performed mechanically exploiting Raspberry pi and bill is updated on the cloud through IoT circuits and it may be checked by the patron anyplace globally. The units consumed and also the calculable bill is distributed to the patron through the application. The patron is formed to get the load used. Just in case of any change of state or power thieving within the energy meter throughout consumption the alert message is given to the net server further on the patron and also the fine quantity is going to be supplemental at the side of their load usage bill. The local area network performs the IoT operation then uploads the data to the server.

Keywords:
Energy Meter, Raspberry Pi, IoT, Units..

INTRODUCTION

The Internet of Things is wont to monitor and discover numerous devices or objects from a distant location. IoT may be a growing phenomenon that is employed in each field today. Here we tend to be area units reaching to do a watching of power victimization IoT. Things is the network of physical devices embedded with the natural philosophy, Software, Sensors, Activators, and network property with the target of exchanging information or aggregation the info. The IoT uses a cross platform framework. It uses straightforward communication devices like Bluetooth, wireless fidelity for the remote access of assorted devices. It uses an immediate integration technique. With the huge biological process changes that area units reordering the globe, energy is the most simple utility needed. Any crisis within the offer of energy would hamper the entire monetary economy, so watching and dominant power consumption beginning at the domestic level is one amongst the simplest solutions. A stimulating technique for such management and awareness development of the expenses of the energy is sensible metering. While not Electricity we tend to cannot arrange our day to day life. Electricity has become a serious role in our society. Energy crisis is one amongst the main issues that the globe faces nowadays. Since the demand for electricity is increasing the folks are unaware of their usage of electricity. By correcting the implementation of watching techniques and dominant techniques victimizing IoT we are able to efficiently use the energy, we are able to avoid the wastage of energy.

1. COMPONENT REQUIREMENT

1. Energy meter

An electricity meter, power meter, electrical meter, or energy meter could be a device that measures the quantity of electrical energy consumed by a residence, a business, or associate degree electrically supercharged device. electrical utilities use electrical meters put in at customers' premises for requests and observation functions.

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Wireless Charging of Electrical Vehicle on Road

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Abstract: *Electric vehicles are seen as an alternative option in response to the depletion of resources. In order to increase the use of EVs in daily life, practical and reliable methods to charge batteries of EVs are quite important, accordingly wireless power transfer (WPT) is considered as a solution to charge batteries. In this project, a prototype system of wireless charger which has 60 kHz operation frequency is designed and implemented. Plug-in Electric Vehicles (PEV) are burdened by the need for cable and plug charger, galvanic isolation of the on-board electronics, bulk and cost of this charger and the large energy storage system (ESS) packs needed. But by using Wireless Charging system's Wireless charging opportunity. It Provides convenience to the customer, inherent electrical isolation, regulation done on grid side and reduces on-board ESS size using dynamic on-road charging. The main objective of our project is to design and develop an antenna system suitable for vehicle using resonant magnetic coupled wireless power transfer technology to electric vehicle charging systems. Application of WPT in EVs provides a clean, convenient and safe operation. At the core of the WPT systems are primary and secondary coils. These coils construct a loosely coupled system where the coupling coefficient is between 0.1-0.5. In order to transfer the rated power, both sides have to be tuned by resonant capacitors. The operating frequency is a key selection criterion for all applications and it especially affects the dimensions of the coils and the selection of the components for the power electronic circuit. A Resonant wireless transfer system for vehicle charging technology is designed.*

Keywords: Electrical Vehicle, Wireless Power transfer, Inductive Power Transfer, Battery

I. INTRODUCTION

The wireless solution is increasingly spreading as a method of battery charging for Electric Vehicles (EVs). The standard technology of wireless EV battery charging is based on the Inductive Power Transfer (IPT) between two coupled coils, one connected to the electrical grid and the other one connected to the rechargeable battery. The IPT provides benefits in terms of safety and comfort, due to the absence of a plug-in operation: through IPT, the electrocution risk typically arising from power cords is avoided and the battery charging operation can automatically start. According to the state of the EV, there are mainly two types of IPT for the wireless charging: static IPT, when the vehicle is stationary and nobody is inside it (e.g. in a parking area); dynamic or quasi-dynamic IPT, when the vehicle is being used (e.g. while in motion or during the traffic red light). The wireless power transfer obviously represents the only solution for the dynamic charging, since the wired connection would be impossible during the motion. In spite of the undeniable advantages brought by Inductive Power Transfer, the researchers have to deal with several issues in order to make this technology even more attractive for the EV market. First of all, an IPT system is inherently less efficient in terms of power transfer efficiency if compared to a conventional wire-based system. Indeed, due to the magnetic coupling between the coils, there is an unavoidable minimum leakage magnetic field, leading to an energy loss. Furthermore, some technical aspects need to be taken into account in the practical implementation of an IPT system: for example, in order to obtain the maximum coupling, the misalignment between the coils must be as small as possible. As far as safety is concerned, even if the IPT allows to reduce the electrocution risk, some care is required regarding the magnetic field exposure. In addition to design-related issues, other important considerations should be made, such as costs, infrastructural implications, standardization and customer reception.

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Arduino Based Fire Fighting Robot

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Abstract: *This project is designed to develop a fire fighting robot using RF control technology for remote operation. The robotic vehicle is loaded with water tanker and a pump which is controlled over wireless communication to throw water. An 8051 series microcontroller is used for the desired operation. This mobile robot is controlled using a mobile phone and reaching fire at the transmitting end using push button, commands are sent to the receiver to control the movement of the robot either to moved forward, backward and left or right. At the receiving end four dc motors are interfaced to the microcontroller. Further project enhanced by interfacing it with a wireless technology.*

Keywords: DC motors, Bluetooth module, water pump, servo motor, flame sensor, Arduino

I. INTRODUCTION

Robot is a machine that looks like a human being and performs various complex tasks. There are many types of robots such as fixed base robot, mobile robot, underwater robot, humanoid robot, space robot and medicine robot etc. In this paper a FIRE EXTINGUISHING ROBOT is proposed. This robot is equipped with a Bluetooth module used and feed the signals to the microcontroller in order to trigger the pump which sprinkles water in order to extinguish the fire. This robot is controlled using a mobile phone. This robot implements the concepts of environmental fire sensing, proportional motor control. The motor driver is used for the bidirectional control of the motors equipped in the robot. Every instruction for motion control is given to the robot with the help of Bluetooth.

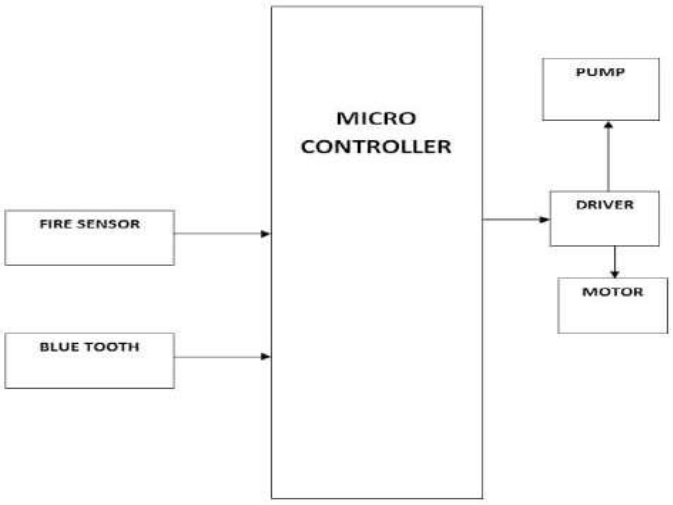

Figure: Block Diagram of Fire Fighting Robot

Thus, the robot processes information from its various key hardware elements such as Bluetooth module via Adriano Uno board (microcontroller). The programming of the robot is done using the arduino C which is derived from C and C++ languages. This paper is presented as follows. Proposed methodology in section II which constitutes of block diagram and components and their explanation. Hardware and software details are included in section III. In

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Solar Powered Dustbin for Efficient Waste Management

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Abstract: *This paper represents the study of smart dustbin for efficient waste management. Nowadays, Urbanization has increased tremendously, at the same time there is an increase in waste production. Waste management is a crucial issue to be considered. So we are developing a Smart Dustbin which will sense the position of humans and automatically open the lid of the dustbin to throw garbage. It will monitor the garbage and inform about the levels of garbage collected in the dustbin via sending SMS to the cleaning staff or the supervisor. Once the garbage reaches the threshold level, the ultrasonic sensor will trigger the GSM modem which will continuously alert the cleaning staff and supervisor until the garbage in the dustbin is squashed. Foul smell from the rotten wastes that remain untreated for a long time, due to the negligence of authorities and carelessness of the public may lead to long-term problems. So once these smart bins are implemented on a large scale, waste can be managed efficiently as it avoids unnecessary lumping of wastes on the roadside and keeps the city clean and restricts the spread of diseases through this.*

Keyword: Solar panel, GSM module, sensors, servo motor, Arduino.

I. INTRODUCTION

Solar powered dustbin is solely powered by solar energy. It keeps track of garbage on a daily basis to efficiently manage the waste in the dustbin. It performs smart compaction of waste to reduce the space occupied by garbage inside the dustbin. It also monitors its fill level in real time monitoring system that integrates multiple technologies which includes the sensors, solar panel and arduino and passes all the information related to dustbin to the network. Aslo it stores electricity in batteries which can be further utilized where fuel free & emission free energy can be obtained from this. The main aim of this project is to offer a cost-effective and efficient waste collection and management system in order to provide a well maintained and healthy environment.

The smart dustbin is built on a microcontroller based platform Arduino Uno board which is interfaced with GSM modem and Ultrasonic sensor. One ultrasonic sensor is used for the position sensing of the human and another ultrasonic sensor is used to open the lid of the dustbin. The system makes use of Arduino, GSM module for sending a message, DC servomotor to open the lid and Solar panel for energy. The system is powered by a 12V battery which gets charged by a solar panel. When the level of garbage crosses the set limit i.e threshold limit, the system sends the message over phone through GSM module. Once the garbage reaches the threshold level the IR sensor will trigger the GSM module which will continuously alert the cleaning staff and supervisor until the garbage in the dustbin is squashed.

This paper is presented as follows. Proposed methodology in section II which consists of block diagram and components and their explanation. Hardware and software details are included in section III. In Section IV, results and conclusions are included.

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THE PARAMETERS MONITORING OF UNMAN RECEIVING STATION BY USING GSM MODULE

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ABSTRACT
As the complexity of distribution network has grown, automation of substation has become a requirement of each utility company to extend its efficiency and to boost the quality of power being delivered. The measured parameters will send as SMS messages. The microcontroller will cooperate with the sensors introduced at the nearby substation and perform a task as commanded. Electrical parameters like current, voltage are going to be compared continuously to its rated value will help protect the distribution and power transformer from burning because of overload, short fault, and overvoltage's, and surges. Under such conditions, the entire unit is closed down through the control area including transfers detecting it, and instantly killing the electric switch. SMS cautions can likewise be produced to demonstrate this. The utilization of GSM makes the substation astute within the sense that it can transmit signals and data and receive commands. This enables to cut back labor cost at the substation and spares time. During this manner, the observing and dealing effectiveness of the sub-station will certainly increment.

Keywords:
Automation, Microcontroller, Substation, Electrical parameters, GSM Module.

I. INTRODUCTION

We know that in India the electricity is distributed by many companies. Organizations such as MSEB – Maharashtra State Electricity Board, Reliance Energy Ltd. BEST – Bombay Electric Supply and Transport. All this distribution has their own receiving station and distribution substations in large number. For e.g. MSEB have 2680 substations approximately. All these require continuous monitoring of parameters to prevent the power system components and power system. For this continuous monitoring the company appoints a supervisor who visits the substation and checks the parameters. But if the substation is far away from the town then it takes time for supervisor to go there and check the parameters and only the waste of time and money. So what's the solution? Solution is nothing but our project name, "Parameters Monitoring of Unman Receiving Substation." The aim of this project is to reduce human efforts and wastage of time and side by side to collect the parameters efficiently and through one place. With the help of this device we can check parameters of every substation sitting at one place on our database. For manufacturing of this device the GSM Module is required and Arduino (AT Mega 328) and P.T., C.T. and relays etc.

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Social Media Fake Profile Detection

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Abstract - *In the current generation, online social networking (OSNs) has become more popular, and social media is becoming more and more associated with these sites. They use OSN to communicate with others, share news, organize events, and run their own e-business. The strong growth of OSNs and the large number of personal information of its subscribers has led attackers, and hypocrites to steal their information, share false news, and spread malicious activities. Fake or man-made fake profiles designed to spread rumors, identity theft etc. So, in this project, we are trying to propose a discovery model, which distinguishes between fake profiles and real profiles on Twitter based on visual features such as fan counts, friends counts, status calculations and more using various machine learning methods.*

1. INTRODUCTION

Artificial intelligence can take many different meanings in different contexts, but a very brief description of Britannica, defines artificial intelligence as the 'computer power to perform tasks that are usually associated with humans'. In today's world, it seems that the A is everywhere, from the most obvious use of self-driving cars to the most obscure as the complimentary programs available on popular platforms like Netflix and Amazon. Machine learning is a subset of AI that contains any computer program that can predict without human intervention. They are able to correct themselves by responding to the data they have been exposed to, like a human child. The ML learning feature refers to the fact that these algorithms attempt to amplify their results, by minimizing error or increasing the probability of their prediction being true. The focus will be on this project the discovery of fake profiles and smart BOTS on social media like twitter. These days fake profile bots are used because they are automatic and can work without anyone. A lot of bots where they are made into tweets and sent to US elections and that can be dangerous because the spread of rumors and false ideas can affect the results by defaming the party in the election and even they can use it to spread publicity, propaganda, war, etc. we are advancing technologically, AI is taking the place of humans and now finding bots are much more sensitive than humans. We have therefore proposed a model that detects smart bots with a fake profile based on the limits of twitter data like followers,tweets, followers, etc. We use twitter data for our model as we can download real-time user twitter data via twitter API

2. BACKGROUND

Social media profiles and bots have been around since the advent of social media. There is often a negative impact on them, as many of them are designed to jeopardize democracy, cause panic attacks, disclose confidential information, affect the stock market, and wreak havoc on the world. However, bots can also be useful for useful purposes such as encouraging users to get shot in the flu, give earthquake warnings, health tips, share automatic drawings, etc. Identifying bad bots can help us understand their behavior and determine which emotional traits make them as prominent as bots. In addition, by easily identifying Twitter accounts as bots, the public can be taught not to be a victim of bot or malicious messages on Twitter. In addition, when bots are detected earlier, their tweets can be quickly protected from spreading on the platform.

Acquisition of Bot

Bot detection is the process of using various tools as well ways to identify bots in a collection. The complexity of this varies depending on the type of bot and the set of symbols it contains. The goal here is to reduce the number of false positives (bots are actually human) and misalignments (humans are actually bots).

Twitter

Twitter is a micro-blogging (condensed blogging) communication platform launched in 2006. Users communicate via tweets, limited to 280 characters in length, in order to convey their message effectively and efficiently. Communication can be in the form of tweeting (messaging), replying (replying to messages), and direct messaging (private chat). Users can access others by tagging them with their handle, the '@' symbol followed by the username of the target account. Users can also interact with others by using the hashtag '#' tag to discuss specific topics, and segment tweets to make it easier to search and retrieve. Additionally, users can select the content they want to see in their timeline by following specific accounts. With the growing popularity of Twitter over the years, companies, schools, celebrities,

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Traffic Sign Detection and Recognition using Convolution Neural Network(CNN)

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Abstract – Traffic Sign Detection and Recognition is an important feature for driver assistance, contributing to safety of drivers, pedestrians and vehicles. In order to focus on driving, drivers sometimes miss out traffic signs on road, or due to bad weather conditions (eg, fog, rain etc.) which could be dangerous for drivers as well as pedestrians. Our Software system would help to detect as well as Identify traffic signs without loosing the focus of drivers while driving. To classify image into respective categories, we build a CNN model (convolution Neural Network). CNN is best for image classification purposes. Tensorflow is used to implement CNN. We are able to implement the model with 99% accuracy. Traffic signs are an essential part of our day to day lives. They contain critical information that ensures the safety of all the people around us. Without traffic signs, all the drivers would be clueless about what might be ahead to them and roads can become a mess. The annual global roach crash statistics say that over 3,280 people die every day in a road accident. These numbers would be much higher in case if there were no traffic signs.

Key Words: convolution neural network, Tensorflow, Traffic Sign Recognition, Machine Learning, Tkinter.

1. INTRODUCTION

Traffic sign recognition system is a crucial research direction in computer vision and a significant section of Advanced Driver Assistance System (ADAS). It can be grouped into two technologies, traffic-sign detection and traffic-sign recognition. The correctness of detection will directly lead to the final identification results. Traffic signs contain necessary messages about vehicle safety and they show the latest traffic conditions, define road rights, forbid and allow some behaviors and driving routes, cue dangerous messages and so on. They can also help drivers identify the condition of the road, so as to determine the driving routes. Traffic signs have some constant characteristics that can be used for detection and classification, among them, color and shape are important attributes that can help drivers obtain road information. The colors used in traffic signs in each country are almost similar, usually consisting of simple colors (red, blue, yellow, etc.) and fixed shapes (circles, triangles, rectangles, etc.). The image of traffic signs is often affected by some external factors such as weather conditions. Therefore, traffic-sign recognition is a challenging subject and also a valuable subject in traffic engineering research. In and, a variety of traffic-sign identification technologies have been developed. In paper, a CNN based on transfer of learning method is put forward. Deep CNN is trained with big data set, and then effective regional convolutional neural network (RCNN) detection is obtained through a spot of standard traffic training examples.

1.1 PHASE 1: DETECTION

In this phase, the image obtained from the camera in the car is preprocessed before the process of detection starts. General preprocessing steps involve converting the obtained RGB image into an HSV image. For detection, the HSV (Hue Saturation Value) color space is preferred over the RGB (Red Green Blue) color space. HSV is more similar to what the human eye actually sees when compared to an RGB image. An RGB image defines colors in terms of three primary colors, whereas HSV has a greater range of colors. An HSV image is also less susceptible to external light changes. The HSV image is equalized to adjust the contrast in the image by modifying the image's histogram. Once the HSV image is obtained, the next steps would be to detect objects based on their color followed by finding out their shape and validating the object to be a traffic sign.

1.1.1 Color based Detection

The first and most important thing we notice in a sign is the color. Once we see the color red, we realize that the board on the side of the road is actually a traffic sign.

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Fire Fighting Robot

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***Abstract*: The purpose of this these is to contribute to the development of automation systems and to design an automatic fire Fighting robot. By this purpose, an attempt was made to develop a mobile robot in order to detect fires that could occur in a closed environment. Designing robot able to move by using the motor drivers, find the flame, and extinguish the fire, and it progresses in conjunction with the search for the fire to control, when it founds the fire and all of this is controlled by the microcontroller (Arduino). The robot can move on the specified and conducts a fire scan as it moves. By using the microcontroller module on it evaluates the data in the direction of the software and performs flame detection, actuation, and extinguishing processes.**

***Keywords*: Fire-Fighter, Robot, Microcontroller, Automatic**

INTRODUCTION

According to National Crime Records Bureau (NCRB), it is estimated that more than 1.2 lakh deaths have been caused because of fire accidents in India from 2010-2014. Even though there are a lot of precautions taken for Fire accidents, these natural/man-made disasters do occur now and then. In the event of a fire breakout, to rescue people and to put out the fire we are forced to use human resources which are not safe. With the advancement of technology especially in Robotics it is very much possible to replace humans with robots for fighting the fire. This would improve the efficiency of firefighters and would also prevent them from risking human lives. Today we are going to build a Fire Fighting Robot using Arduino, which will automatically sense the fire and start the water pump. In this project, we will learn how to build a simple robot using Arduino that could move towards the fire and pump out.

II. RELATED WORK

Fire fighting is the act of extinguishing destructive fires. A fire fighter must be able to stop fire quickly and safely extinguish the fire, preventing further damage and rescue victims to a safer location from the hazard Technology has finally bridged the gap between fire fighting and machines allowing for a more efficient and effective method of fire fighting Robots were developed. In real life, destructive burnt area often happens without our realization. Therefore, this type of robot will require a high demands in the market because of its usefulness to the human as well as the environment. To find a fire, before it rages out of control. The robots could one day work with fire fighters in reducing the risk of injury to victims. To simulate the dangerous fire fighting works. Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. The arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Additionally, the arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package. The infrared flame sensor can detect flame or wavelength of light source within 760nm 1100nm. Lighter flame can be detected from the distance of 80cm, greater the flame, further the test distance. Relay's driver is used to switch ON or OFF the RELAY. Arduino will send data to the base of transistor. If base of transistor is at zero volts then transistor is off and relay is in de-energized condition. Therefore NO contact remains NO. If base of transistor is at +5 volts then transistor is ON and current flows through transistor as well as relay. Therefore relay is in energized condition. Therefore NO contact will become NC. We are using transistor BC547 as relay driver as well as buzzer driver.

I. Existing System

The current fire extinguisher robots are basically human dependent system. One has to take the control of robot. The process of taking control and giving instructions to robot is time consuming and not safe for the person controlling it. In case the fire gets out of control and is no more controllable by robot it could put the life of the person who is controlling robot in danger. The existing systems either uses fans or depend upon an external source to extinguish fire and they uses smoke detectors which are useful but not highly reliable. This project implement a smart firefighting robot system (LAHEEB) which designed to detect the source of fire, extinguish it and increase the knowledge about fire behaviour from the incident area. The whole system is programmed using an Arduino UNO board (ATmega328P microcontroller) which forms the brain of the system. It has term that has since been or undesirable.

II. Proposed system

- The purpose of this project is to design, build, and test a robot capable of extinguishing building and basement fires and effectively replacing a fire fighter in highly dangerous situations.

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Attendance System Using Face Recognition Technique

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Rasayani, Raigad, Maharashtra, India

Abstract: **The management of the attendance which is manual in fashion will create a huge burden on staff. This primitive fashion of attendance system where staff calls a student by his name or roll no. or the sheet is passed around the whole class for taking signatures on it, which can be easily manipulated by students. Many more technologies of attendance system like RFID, Fingerprint scanner and other biometric does exist in most of the institute or organization. These attendance systems require installations of gadgets which drives up the cost and has more maintenance and is also time consuming. This project paper aims to introduce a face recognition attendance system where no extra gadgets are required. When students will be gathered in the class, their faces will be captured from a live video feed and then compared with existing facial database of student's directory. If it matches, then the attendance is marked along with the time.**

Keywords: **attendance, fingerprint scanner, biometric, RFID, facial database**

I. INTRODUCTION

This project mainly focusses to the attendance system, where manual attendance system will be upgraded to automated attendance system in the classroom. Most of the higher institutes in our region or state, staff takes the attendance by calling out the name, roll no. or by simply passing the attendance sheet throughout the class to mark the manual attendance of the student. This system of marking attendance is very simple and primitive and can be easily manipulated by the students or as well as staff too. In recent times, the development in the field of Artificial Intelligence, Machine Learning, Image Processing and Convolution Neural Network (CNN) has increased to a great extent, through this the facial recognition technique has reached to its greater heights and enough to be used in real world application. A Classroom is a place where there are many numbers of students and a single staff is present. It becomes a very confusing and a tedious task to mark the attendance physically and particular to each student. To overcome the situation, we have used Python as programming language and OpenCV Library to capture and detect faces of the students. The captured faces of the students will be compared and matched with the ones which are saved in the existing database of the student directory. Saved students images contained in the database help to generate the facial recognition algorithm extracts features like forehead, mouth, eyes, nose, chin, jaws. In research it is mentioned that there are 68 specific points (called landmark) that exist on every face. Face captured in camera, A facial signature is generated and will be compared with the existing signature which is saved in database. If it matches then the attendance is marked only for the ones who is present in the classroom.

II. RELATED WORK

Step 1: Creating Encodings
The images of the students will be saved in a directory. Simultaneously one by one images will turn through a convolution neural network (CNN). This CNN will return 128 measurements for each face. CNN knows better which part of the faces to take to generate these 128 measurements. The parts of faces which generates measurements are unknown to us.

Step 2: Face Detection
We don't require the colour like data to find faces, the first primary job is to convert the image into black and white. After this the pixel analysis is performed. It will analyse each and every pixel in the image as well as the neighbouring pixel. The process of figuring out how dark or light a particular pixel is a compared to nearby pixels is called arrow shadowing. These arrows are called gradients and they show the flow from light to dark across the entire image. Then the convolution neural network is applied and start breaking the image into small squares of 16x6 pixel each. Each of the square count up the gradient points in each major direction.

Step 3: Posing and Projecting Faces
When the face is being isolated in an image due to any issue, we have to deal with the problem that faces which turned in different direction look totally different to a computer. To overcome to this problem, we will warp the image so that the eyes and lips are always in the sample place in the image. Through this we will be using algorithm known as face landmark estimation. The basic idea of this algorithm it will point out the 68 specific points which exist on every face. Outside edge of eye, top of the chin, inner edge of the eyebrow, etc. Machine learning algorithm is trained to point out the 68 specific points on any face. From this stage of recognition, we know where the eyes and mouth are, we will simply rotate, scale and shear the image so that the eyes and mouth are cantered as best as possible. Now it doesn't matter how the face is turned, we are able to centre the eyes and mouth are in roughly the same position in the picture. This will make our next step lot easier and more accurate.

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Extreme Gradient Boosting Based Question Similarity Predictor

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[4]*Professor, Department of Information Technology Pillai HOC College of Engineering and Technology Rasayani India*

Abstract - *Question and Answer Websites are a very popular medium for people to share knowledge and experience. We aim to ease the searching of questions on these websites. In this paper we have compared multiple machine learning algorithms to predict similar questions using real world data set.*

Key Words: **Machine Learning, Linear Regression, Logistic Regression, Extreme Gradient Boosting, Log Loss, Quora, Question and Answer**

1.INTRODUCTION

Nowadays question answer websites like Quora, stack overflow, Yahoo Answers, Google scholars have become a very popular medium to search questions for laymen as well as domain experts. Many people ask similar worded questions multiple times. Multiple questions with the same intent can cause users to spend more time seeking the best answer for their question. Similarly, writers should not feel the need to answer the same question multiple times. We have used a machine learning based approach for searching questions on the website. The main problem in these tasks is to identify that the questions asked are duplicates of questions that have already been asked. This could be useful to instantly provide answers to questions that have already been answered. We are tasked with predicting whether a pair of questions are duplicates or not.

2. LITERATURE SURVEY

We've Compared Multiple Models, but the Random Models is the worst-case scenario. The test Log-Loss using Random Model is 0.8865. whereas when the data is linearly separable i.e., while using Logistic Regression we encountered test Log-Loss of 0.4237. In linear support vector machines where the data is separated using 2 plains, we got a test Log-Loss of 0.5078.

3. DATA ACQUISITION

We have used the Quora data set for implementing machine learning algorithms. This data set has more than 4 lakh data points. Each data point consists of two questions and a binary value which states whether they are similar or not.

	id	qid1	qid2	question1	question2	is_duplicate
0	0	1	2	What is the step by step guide to invest in sh...	What is the step by step guide to invest in sh...	0
1	1	3	4	What is the story of Kohinoor (Koh-i-Noor) Dia...	What would happen if the Indian government sto...	0
2	2	5	6	How can I increase the speed of my internet co...	How can Internet speed be increased by hacking...	0
3	3	7	8	Why am I mentally very lonely? How can I solve...	Find the remainder when [math]23^{24}[/math] i...	0
4	4	9	10	Which one dissolve in water quikly sugar, salt...	Which fish would survive in salt water?	0

Chart -1: Example Points from Dataset

4. EXPLORATORY DATA ANALYSIS

The data set is imbalanced, 63% of the data points are not similar i.e., more than 2.5 lakh question pairs are not similar.

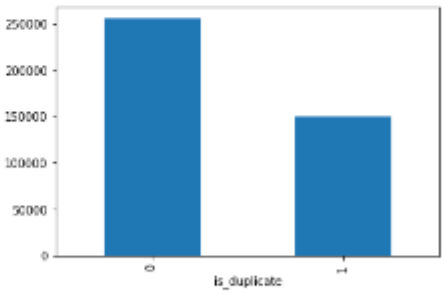

Chart -2: Imbalance Dataset

5. PRE-PROCESSING

5.1 Data Cleaning

In the process of cleaning of data, we have included steps like

- Removing of stop words
- Removing HTML tags
- Removing punctuations
- Expanding Contractions
- Performing Stemming
- Filling N.A. Values

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Extreme Gradient Boosting Based Question Similarity Predictor

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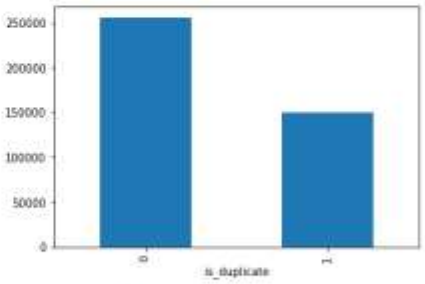

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Novel Technologies for Waste Management: A Literature Review

Ms. Prachi Sorte, Ms. Kiranjeet Kaur

Abstract- In the present situation, waste management has become a basic worry because of quick urbanization, social, monetary exercises and fast ascent in human population. The proportion of solid waste generated by the world is steadily increasing. The rise in environmental pollution caused by unmanaged solid waste management is terrifying and hence has become a matter of concern for the government. Improper handling of waste collection and inappropriate disposal of solid waste has resulted to become a source of water, land and air pollution. This ultimately creates risks and threats to human health and the environment. There is a need to implement suitable waste management techniques for a particular area and its waste situation. This paper highlights the literature review of current trending techniques for urban solid waste management. The study would upgrade the solid waste management reform; boost its management and efficiency to ensure the practical solutions for solid waste collection process, monitoring and management for green environment..

Index Terms— Waste management technologies, Solid waste management, municipal solid waste management (MSWM).

1 Introduction

Solid waste management is one of the basic and fundamental services provided by municipal authorities in the developing country to keep cities clean and hygienic. Current existing system is manual, slow, statistically invalid, inefficient and outdated. In the developing countries, waste management is a serious issue as rise in urbanization and economic development is leading to major growth in quantities of waste materials. The environment pollution due to unmanaged solid waste is drastic and hence has become a social issue. Several urban cities do not have ideal waste management techniques which have resulted in dumping of waste in open areas, burning or burying of waste causing serious environmental issues. If the existing situations of waste management are not handling correctly, it would lead to major environmental concers which can cause threats to living beings on earth. Improper mangement of waste can be a dangerous health hazard and can cause spread of deadly infectious diseases. Municipal solid waste production is rapidly increasing every year. From 1980, waste generation has increased tremendously by a factor of 2.6 [1]

Improper waste management can has resulted to in a cycle affecting everything around our atmosphere. If the generated waste is left unattended lying around, it can invite disease spreading insect like flies, mosquitoes, rats etc. resulting an unhygienic living environment. These infected insects then originate serious diseases like malaria, diarrhea, jaundice, plague etc. Animals which graze on such waste areas can spread on diseases via food chain. Also the waste not being collected can clog storm water run off leading to formation of sluggish water bodies that become breeding area for disease causing agents.

To overcome the increase in generation of waste we need to develop an effective, innovative and robust waste management system that can upgrade the present system as well as be time and cost efficient. This situation of waste management can be only addressed by importing the latest technologies in the existing system. In this paper we will review proposed models for the solid waste management.

Reduce, reuse, recycle, sorting, segregate, processing, and disposing are vital steps of waste management [2]. According to World Bank global review world cities generates about 1.3 billion tonnes of MSW annually, the amount is expected to reach 2.2 billion tonnes by the end of 2025 [2]. Solid waste management sector comes under the duty of local government, and reasonable portion of budget is allocated for this [2]. Poor collection of waste leads deterioration of environmental aesthetics, local flooding, land, air, and water pollution [2] [3]. All these issues leads to severe human health hazards.These can only be minimized by implementing effective techniques for waste management.

To overcome the severe consequences of poor waste mana gement and human health risks recently many new technologies have been introduced. These are more environmentall sound and efficient. While the choice and application of such technology depends upon different factors including country's economic condition, priorities, and types of waste generated [5].

The objective of the paper is to compile recently introduced technologies in the sector of MSWM. MSWM comprises a huge network of activities from storage to disposal. There is a need for developing countries to shift their focus on latest technologies for waste management. Then only environmental contamination and human health risks due to the poor waste management can be avoided. This paper briefly coveres those latest and innovative technologies of waste management from storage, collection, recycling, processing, energy recovery and final disposal.

2 Methodology

Strong waste administration basically endeavors the collec-tion of waste from the source and does unmistakable strides for its removal. This can be cultivated either by treating the waste or finally orchestrating it on a land-fill area. The essential procedures engaged with strong waste administration are: Collection of waste, Transportation of waste and Disposal or preparing of waste.

Collecting the generated waste from their source is an important step in solid waste management. Effective collection of solid waste and its segregation decides how well solid waste is managed. Usually collection of waste is done manually by the workers of the municipal cooperation.

Moving of gathered waste from source is a greater amount often finished with the help of bullock trucks, three-wheelers, tractors, trucks and so on. Numerous urban communities these days have actualized the utilization of water controlled vehicles (hydraulics driven vehicles) for the assort-

Current Potholes and Hump Detection Techniques: A Literature Review

Ms. Kiranjeet Kaur Sandhu, Ms. Prachi Sorte

Abstract—India recorded that over 9,300 people had been killed and nearly 25,000 were injured in road accidents as a result of potholes. This is a serious concern over increasing accidents due to potholes on roads and these are much more than deaths due to terror attacks. It is unacceptable that such a large number of deaths take place on roads due to potholes and humps. A constant detection and repair in proper time can not only result in ensuring road surface quality but can also save many lives. Many Proposals are collected from the standard journals, and it is first reviewed chronologically to find out the contributions in potholes and hump detection techniques. After reviewing, the various challenges addressed in the road maintenance is discussed. The various approaches used in the detection of potholes and humps are discussed and reviewed. The approach such as a vibration based for automatic detection of potholes and speed breakers along with their coordinates, a stereo vision system which detects potholes during driving, an internet of things based road monitoring system (IoT-RMS) is proposed to identify the potholes and humps in the road, Ultrasonic sensors are used to identify potholes and humps and also to measure their depth and height respectively, Computer vision approaches are generally based on either 2D road image analysis or 3D road surface modeling. As the research outcome, case studies are taken and reviewed.

Index Terms—pothole detection, computer vision, road surface modeling, speed breaker, road surface monitoring, stereo vision,cloud, IoT , ultrasonic Sensors, Android application.

1 Introduction

India, the second most populous Country within the earth and a quick growing economy, is understood to possess an infinite network of roads. Roads are the dominant means of transportation in India today. They carry almost 90 percent of the country's passenger traffic and 65 percent of its freight [1]. However, most of the roads in India are narrow and congested with poor surface quality and road maintenance needs don't seem to be satisfactorily met. No matter where you're in India, driving may be a breath-holding, multi-mirror involving, potentially life threatening affair.

The bad road condition is the main reason for all the truck accidents, per the survey in [3]. The weakened road system increases the upkeep cost and also the negative effects on the axle and mechanical system of the vehicles. Various factors which affect the performance of the road are 1) Heavy traffic which causes the repetition of the load 2) low-quality materials and inappropriate moisture condition at construction.

Potholes, formed due to heavy rains and movement of heavy vehicles, also become a major reason for traumatic accidents and loss of human lives. Road surfaces can be classified into different categories such as smooth roads, potholes, bumps, contraction joints, man holes, expansion joints etc [2]. The surfaces where one has to slow down his speed are potholes and bumps (also known as speed breakers).

Fig 1 represents the statistical data of Indians killed in pothole related accidents over the past four years and shows top states in pothole deaths. Following is the report by the ministry of road transport.

Fig 1: Statistic Report by Government representing road accident

From the above data we can see Pothole-ridden roads have taken 11,386 lives across India in the last four years, which interprets into roughly seven deaths each day. These dangerous road conditions are a distraction for all the commuters, hence detection of these potholes plays a major role in fixing them on time and can prevent many road accidents. For pothole detection many approaches are preexisting but

A Deep Learning Approach For Detecting Click Ad Frauds in Mobile Advertising

Rutika Bangera , Deepti Bhoir , Hemangi Koli,Prachi Sorte

Abstract— Click fraud: intentionally clicking on the advertisements with no personal interest in the ad but to increase illegal revenue for the application publishers. This pay per click model has an empty space for the rival companies to post false ads to effect the healthy growing companies. Due to click fraud attack advertiser has result to loss as they have to pay to the publisher for the number of clicks on the advertisement. In this paper we proposed a click fraud detection model, to classify fraudulent click based on the features provided using CNN algorithm - a deep learning algorithm. After analysis of the CNN algorithm we get a graph chart which gives us an idea on whether the click was fraudulent or not. Our project helps in industries who want to either design a system wherein they prevent the fraudulent clicks before it attacks the end users .We have gain an accuracy of about 99.7% and result will be represented in the form of graph.

Index Terms— Click fraud,CNN(Convolutional Neural Network)

1 Introduction

In recent years, mobile advertising has became everyones first priority as a mean for publishers to monetize their free applications.One of the main concerns in the in-app advertsing industry is the popular attack known as "click fraud" which is the act of clicking on an ad, not because of end user is interested on that ad, but just to get revenue from clicks for the application publisher.In fact, researchers predicted a growth of $17 billion by 2018 for mobile advertising

The mobile advertising industry also known as in-app advertising. consists of four main components: 1) The user that views the ad, 2) The advertiser that pays to have his/her ad shown in a set of applications, 3) The publisher (i.e. the application's developer) who is willing to display ads in his/her application in return for a certain revenue, and 4) The ad network that works as a relay between the advertiser and the publisher.

Number of charging models in industries are cost-per-thousand-impression model, the cost-per-click model, and the cost-per-action model. One of the popular type of attack in the in-app advertising industry is known as "click fraud". Click fraud is intentionally clicking on the advertisements with no personal interest in the ad but to increase illegal revenue for the application publishers. Due to click fraud attack advertiser has gain loss.

In this project we have adopted different features which undergoes training and testing using CNN algorithm.We represented the result in the form of graph for better understanding. the result in the form of graph for better understanding.

2 Related Work

Frank VAnhoenshoven[3] addresses the detection of malicious URLs as a binary classification problem and studies the performance of several well-known classifiers such as Naive Bayes, Support Vector Machines, Multi-Layer Perceptron, Decision Trees, Random Forest and k-Nearest Neighbors. In order to find falsified sites, the web security community has developed blacklisting services. These blacklists are inturn constructed using techniques including reporting, honeypots, and web crawlers combined with site analysis heuristics. The results of this paper suggest that the classification methods achieve competitive prediction accuracy rates for URL classification

Linfeng Zhang [4] address the problem of detecting duplicate clicks in pay-per-click streams over jumping windows and sliding windows The first that propose two innovative algorithms that make only one Passover click streams and require significantly less memory space and operations.GBF algorithm is built on group Bloom filters which can process click streams over jumping windows with small number of sub-windows, while TBF algorithm is based on a new data structurecalled timing Bloom filter that identify click fraud over sliding windows and jumping windows with large number of sub-windows.

Mehmed Kantardzic[2] implemented multilevel data fusion mechanism used in CCFDP for real time click fraud detection and prevention. Prevention include blocking suspicious traffic by IP, referrer,

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Pothole and Alcohol Detection using IoT

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Abstract : *This document is an overview of the project completed by me. IoT Based alcohol detection using an Arduino Uno microcontroller interfaced with an MQ-3 sensor which detects alcohol along with a DC motor to demonstrate the concept. The system uses the MQ-3 alcohol sensor to continuously monitor the blood alcohol content (BAC) to detect the existence of liquor in the exhalation of a driver. By placing the sensor on the steering wheel, our system has the capacity to continuously check alcohol level from the driver's breath. The ignition will fail to start if the sensors detect the content of alcohol in the driver's breath. In case the driver got drunk while driving, the sensor will still detect alcohol in his breath and stop the engine so that the car would not accelerate any further, by using GPS module the location will be tracked and the system uses ultrasonic sensors for detecting the potholes and GPS is used for plotting the location of potholes on maps.*

Key Words: GPS module, DC Motor, Sensors, Pothole's detection, Arduino UNO, Ultrasonic sensors.

Introduction

IOT is a network in which all physical objects are connected to the internet through network devices or routers and exchange data. IOT allows objects to be controlled remotely across existing network infrastructure. It connects all the devices to the internet and let them communicate with each other over the internet. It is a giant network of connected devices all of which gather and share data about how they are used and the environments in which they are operated.

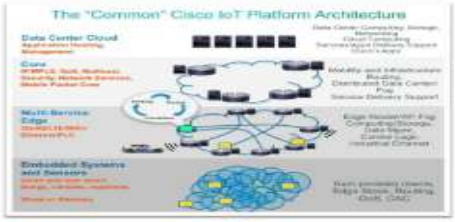

Fig.1.1. Architecture of IOT

1. Literature Survey

[1] Pathan Amir khan Ayyub khan in his survey IoT Based Pothole Detection & Alert System: detection of potholes on roads and alerting the driver. They describe a system and an associated algorithm to monitor the pothole conditions on the road & simultaneously it alerts the driver about those potholes. The IoT based Pothole Detection System, uses 2 ultrasonic Sensors for detecting those potholes more accurately.

[2] Robin Burke, in his survey Hybrid Recommender Systems: Survey and Experiments explains various recommendation techniques. It compares the various techniques and shows which techniques are better based on the evaluation metrics. This fact has provided incentive for research in hybrid recommender systems that combine techniques for improved performance.

[3] Gilbert Badaro, Hazem Hajj, Wassim El-Hajj and Lama Nachman, 2013 in hybrid approach: for collaborative filtering for recommender systems talks about a new hybrid approach for solving the problem of finding the

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Secure Approach for Medical Record Using Blockchain Technology

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Abstract – *Electronic Health Records (EHRs) are used to protect the history of the Patient's data. But it is entirely controlled by the hospitals. This project tends to enforce our framework in an exceeding image that ensures privacy, security, convenience, and fine-grained access management over EHR (Electronic Health Record) knowledge. The deliberate paper will appreciably reduce the turnaround for EHR sharing, enhance the better cognitive manner for clinical aid. Hospitals stores all the data of patient's medical records in their electronic health record system. In critical situations, patients need to focus on the details of their health records and restore their data. Blockchain technology provides an encrypted electronic healthcare system, including medical records as well as data of every patient and their treating doctors. This technology is based on a proof of work algorithm-based system, in which all the data of every patient is encrypted and cannot be manipulated.*

Key Words: **Blockchain, Electronic Health Record (EHR), Database, Proof of work Algorithm.**

1. INTRODUCTION

In the modern world, we stock each element like emails, photos, videos, and banking services but we do not have a proper system to check the entire history of the health record. Electronic Health Records (EHRs) offers service which is efficient for health record storage. It removes the traditional problem in which patient medical records are written on paper and in the current system it is electronically easily accessible on the secured website. In today's world, the patient loses their medical data across different locations during life events. So the patient may lose control of the prevailing medical data. There's limited access to the EHR system for patients and unable to access data with providers. In this article, we will discuss how blockchain can be applied to improve the way electronic health records (EHR) are handled across various health institutions. The main issue is how to put patients at the centre of their healthcare data and share medical data while ensuring the protection of patient privacy, data integrity, and avoiding data manipulation. To do that, we will first present the blockchain methodology used to handle electronic health records then, we will discuss and analyse the usability of our software implementation for electronic health records.

2. LITERATURE SURVEY

A patient report database is that the set of additives that shape the mechanism via way of means by which affected person data are created and stored. Patient records appear during a sort of form, for instance, a paper, a disk, a computer Hard disk. They are created and stored frequently in medical institutions such as hospitals and public health infirmaries. A machine-based Medical record system is an electronic patient record stored in a system specifically designed to support users by giving access to accurate data, alerts, reminders, medical selection aid systems, hyperlinks to clinical knowledge, and different aids.

As stated by Agajo, Adedokun, and Karngong, In their paper, Crypto Hash Algorithm-Based Blockchain Technology for managing Decentralized Ledger Database. "This research work presents a unique secured decentralized ledger in during a database that manages petroleum product distribution records employing a secure hash algorithm- based blockchain."

As stated by Mayer, Da Costa, and Righi, In their paper, Electronic health records in a blockchain. "In this study, a scientific literature review regarding EHRs within a blockchain was conducted, to identify and discuss the foremost issues, challenges, and possible benefits from Blockchain adoption within the healthcare sector."

As stated by Malavika M.B, Richa Kumari, Nihara S.M, In their paper, Blockchain technology in an electronic health record system. The consequences of this paper are particularly targeted on maintaining the records of the patients with the help of using imparting protection via blockchain and more than one ABS scheme. This subsection compares the performance and different vital homes of the proposed and previous ABS schemes with the aid of using thinking about the hash function.

3. METHODOLOGY

Blockchain technology is formed together by different blocks that are connected as chains in a network. It makes a decentralized system. Each block contains a hash code of previous blocks in them along with current block data. Any records can be added to this type of blockchain

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Emotion and Personality Analysis in Recorded Video Interview Using TensorFlow

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Abstract – Post Covid times have made it difficult to meet personally and get to know the potential candidates on individual basis. Although, advances in AI has made it possible to successfully recognize personality traits and other non-verbal cues with the help of camera. In this study, Convolutional neural network (CNN) using Deep learning (DL) has been taken in use to extract personality traits from video and speech feeds to output desired results.

Key Words: Convolutional Neural Network, Deep Learning, Artificial Intelligence, TensorFlow, Personality Computing

1. INTRODUCTION

It has been found that the personality is the preferred method of choosing an employee. Many job candidates can lie when they report their personality to get more career possibilities. Most organizations check candidates' personalities from their facial cues and other insignificant clues during job interviews because candidates have a serious problem making illegal references. However, it is not possible for everyone who applies for a job to attend a live interview or participate in telephone interviews due to limited time. Recorded video software can help to evaluate candidates simultaneously. This method lets the organization to check the recordings at any point of time. When assessing through the recorded interviews, HR's often find it a challenge to understand how to properly assess the personality traits of candidates depending on video images.

1.1 PERSONALITY TAXONOMY

Personality refers to "individual variation of patterns of thought, emotion and behaviour". This structure is often used to predict that the candidate will perform well in a particular field of work and participate well in the future cultural environment. While a variety of models can be used to assess personality, the "five main features", also called the OCEAN model, provide researchers with a properly laid out classification of choice for candidates. The core elements of the five major divisions are subdivided and used in a variety of cultural contexts, and they are: neuroticism, extraversion, openness, agreeableness and conscientiousness.

1.2 PERSONALITY COMPUTING

In the context of the analysis of social data, people look at and elucidate the indications shown by others and reach conclusions about their personality during interactions such as interviews. Brunswik's lens model, shown in Figure1 shows that the interviewee uses certain methods to assess the interviewer's personality and perception of the interviewer.

Fig-1. Brunswik's lens

Distal indicators (any visual indications that the HR can point out, such as visual expressions, look, body movements, and speech). Alternatively, Organizations often use "lens model" to identify the missing personality features of the interviewer by using descriptive definitions (i.e., any interviewed behavior observed by the HR; however, these references may translate to ideas from the organization.

Researchers, in their trials, have found that in addition to the face and muscle of applicants identified in asynchronously recorded interviews, the interviewer or character can still use non-verbal methods to judge the personality traits of the candidates. Few experimental studies have shown that a person can say that the acceptable personality traits of zero skeptics are based on short video. The personality computing, a new-age research field related to AI and human psychology, is used to automatically recognize and integrate personality and human behavior based on lens model. The 3 ways to use

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Automate Billing on Shopping Cart Using RFID

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Abstract - *The modern age technology in which most of the customer needs to wait in the supermarket. Among the difficulties faced by the customers, one difficulty is to follow the queue through the billing process. The main aim is to satisfy the customer and also reduce the time spent on the billing process which is to complete the billing process in a trolley rather than waiting in a queue even for one or two products. The customers have to add the products after a short scan in a trolley and when done the finalized amount will be displayed in the trolley. We have ensured security for preventing theft and also facilitated users who unknowingly drop their products into the trolley by cautioning them. We aim to mitigate the time consumption in a purchase by getting rid of queues ensuring customer's comfort and shrinking the tediousness of barcode scanning and alliminating waging of billers, thereby accomplishing both customer and shopkeeper demands. In this regard, the Internet of Things (IoT) based Automate billing on shopping cart is proposed which consists of Radio Frequency Identification (RFID) sensors, ESP8266 microcontroller, RFID sensors depend on wireless communication. One part is the RFID tag attached to each product and the other is an RFID reader that reads the product information efficiently. Then shopping information sends to the server wirelessly and automatically generates billing.*

Key Words: ESP8266, Local Server, RFID, Intelligent Cart

1. INTRODUCTION

In the days, shopping at big malls and supermarkets is becoming daily activity. Which makes it a crowded place to buy things. After buying goods one needs to stand in the queue, that is a time-consuming process. Many places they are using bar code to scanning products. At the billing counter, the cashier prepares the bill using a bar code reader which is a time-consuming process and results in long queues at billing counters. The rush is even more when there are special offers and discounts. We are aiming to develop a system that can be used in shopping malls. The system which we are preparing is placed in the trolley. It will consist of RFID (Radio Frequency Identification) reader. All the products in the mall will be equipped with RFID tags. Radio-frequency identification (RFID) uses an electromagnetic field to automatically identify and track tags attached to objects. An RFID tag consists of a tiny radio transponder; a radio receiver and a transmitter. When triggered by an electromagnetic interrogation a pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number, back to the reader. This number can be used to inventory goods. By using this technology, we can reduce the time for scanning products as compared to bar code scanning. After scanning the products, it will show on the display with total numbers of products bought and their cost. If any product is deducted from cart then it will automatically reduce from the list of product buy. The display will show the total number of products with their cost. At the billing counter, the total bill data will be transferred to the PC by wireless RF modules. Then at the billing counter just pay the bill. The system based on the RFID technique is efficient, compact, and shows promising performance. It handles cases of deception if any, thereby making the system attractive not only to the customers but also to the sellers.

2. Purpose

The objectives of the Intelligent shopping cart are abundant, including saving time, providing a better shopping experience, and providing marketing data for retailers. Only in this way, the objectives of an intelligent shopping cart can meet the demand of the customers, the retailers, and the brands at the same time. It will make creates a better shopping experience for the customers by saving their time. It minimizes the manpower required at the shopping mall, as results in load at the check-out counters are eliminated. It handles cases of deception if any, thereby making the system attractive not only to the customers but also to the sellers. We implement to simplify the billing process, make it swift and increase the security using RFID technique. This will take the overall shopping experience to a different level. Automatic billing of products by using the RFID technique will be a more viable option in the future. The system based on the RFID technique is efficient, compact, and shows promising performance.

3. Block Diagram

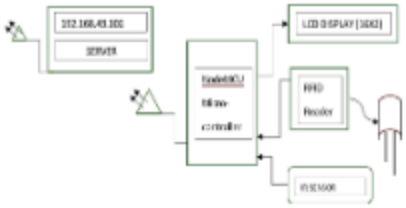

Fig 3.1: Block Diagram

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Wireless Spy Robot

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***Abstract*: In this project our aim is to use the Wireless connectivity for controlling our spy robot. Our spy robot can also be used in military as a weapon.Our robot detects the enemy, as we have placed wireless camera on the robot it genrates the real time video which is viible to the robot operator. If the robot operator seen any enemy as also he an also shoot as the gun and harmful poisionous gas is placed on the robot.In this scenario making a mobile phone operated Robotic Car with GUN mounted on it is good idea. Conventionally, wireless-controlled robots use RF circuits, which have the drawbacks of limited working range, limited frequency range and limited control. Use of a mobile phone for robotic control can overcome these limitations. It provides the ad vantages of robust control, working range as large as the coverage area of the service provider no interference with other controllers. Generally, the preceptors are sensors mounted on the robot, processing is done by the on-board micro controller or processor, and the task (action) is performed using motors or with some other actuators.**

***Keywords*: ESP32, Battery, Wireless Camera, Mobile phone, Motor Drivers.**

1. INTRODUCTION

The main purpose of this project is to develop a remote user interface to control a Robot via a wireless technology. There is a need to communicate with the robot remotely in order to control the robot movements and pass critical data both ways.In this project our aim is to use the Wireless connectivity for controlling our spy robot. Our spy robot can also be used in military as a weapon.Our robot detects the enemy ,as we have placed wireless camera on the robot it genrates the real time video which is visible to the robot operator. If the robot operator seen any enemy as also the operator can also shoot as the gun and harmful poisionous gas is placed on the robot.The word "robot" originates from the Czech word for forced labour, or serf. Playwright Karel Capek, whose fictional robotic inventions was much like Dr. Frankenstein's mon-ster—creatures created by chemical and biological, rather than mechanical, methods, introduced it. But the current mechanical robots of popular culture are not much different from these fictional biological creations. Industrial automation gives Robotics a considerable momentum to explore newer avenues of applications. Robotics is being used for industrial automation to extent that the terms robotics and industrial automation have became synonyms in the industrial world .the advance made in the field of mechatronics has virtually made sign of robotic system much easier. The need is only to identify right product for application. Robotics is a design and manufacture of intelligent machines that are programmed to perform specific tasks. Robots are generally designed to be a helping hand. They help us in difficult, unsafe or boring tasks. Simply put robots are machines that can perform variety of jobs and they can range from simple machines to highly complex computer-controlled intelligent systems.

2. LITERATURE SURVEY

Intelligent combat robot 2015: It has described to develop a robotic vehicle using RF technology for remote operation attached with wireless camera for monitoring purpose. The robot along with camera can wireless transmit real-time video with night vision capabilities. This is kind of robot can be helpful for spying purpose in war fields. In this technolgy as robot can only controlled in 10 meters.

Bluetooth controlled robot: A new classification algorithm was proposed to improve the range of the robot with the increased speed.In this technology the,there was frequentb loss of connectivity of the camera..

AwabFakih, JovitaSerraohave proposed the mobile operated vehicle is a concept where a human being can control a vehicle by an android app by remote or wireless operation, without physically being seated inside it. The project comprises of a vehicle powered by a battery and a controller which has a bluetooth connectivity. The system consists of a controller equipped by bluetooth communication IC, it will be connected to the motors and other parts of vehicle. When an android app which will be connected to this system by bluetooth is switched on one can operate the vehicle by wireless commands given from app. The operation range of bluetooth is around 10 meters or 33 feet approximately.

Dr. S. Bhargavi and S. Manjunath, Electronics and Communicationthe objective of this paper is to minimize human casualties in terrorist attack such as 26/11. The combatrobot has been designed to tackle such a cruel terror attacks. This robot is radio operated, self- powered, and has all the controls like a normal car. A wireless camera has been installed on it, so that it can monitor enemy remotely when required. It can silently enter into enemy area and send us all the information through its' tiny Camera eyes.This spy robot can be used in star hotels,shopping malls, jewellery show rooms, etc where there can be threat from intruders or terrorists. Since human life is always precious, these robots are the replacement of fighters against terrorist in war areas.

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Lung Cancer Detection using 3D Convolution Neural Network

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Abstract -*Lung cancer happens once cells divide within the lungs uncontrollably. Carcinoma is the third commonest cancer. The employment of routine chest radiographs for the screening has well-tried ineffective, and on reports that false-positive check results are common and may result in a supererogatory worry, testing, and surgery. In this paper, we tend to propose a way to trace cancer nodules in lungs mistreatment Convolutional Neural Network. Dataset used here is LUNA16 that carries with it 754975 sample slides. The CNN is going to be trained until we tend to get loss <0.1.*

Key Words: Lung cancer, Convolutional Neural Network, LUNA16, GoogLeNet, LeNet.

1. INTRODUCTION

Cancer could be a cluster of diseases involving abnormal cell growth with the potential to invade or unfold to different elements of the body. This distinction with benign tumors, that don't unfold. The unfold of cancer ought to be in check to save lots of lives. Carcinoma is the second commonest cancer in each boy and girl. It's conjointly the leading reason behind death from cancer. Most cancers that begin within the respiratory organ, referred to as primary respiratory organ cancers, are carcinomas. The overwhelming majority (85%) of cases of carcinoma square measure because of long-term tobacco smoking. Concerning 10–15% of cases occur in those who haven't preserved. The increasing rate has been declining since the middle Nineteen.

Lung cancer is split into a pair of main types: non-small cell carcinoma and tiny cell carcinoma. These sorts grow and unfold otherwise. Concerning eighty-fifth to ninetieth of respiratory organ cancers are non-small cell. This cancer has three major types: carcinoma, Squamous cell malignant neoplastic disease, massive cell malignant neoplastic disease. They're classified by the type of respiratory organ cell cancer started in and by, however, the cells look below a magnifier. They need slight variations among them. Solely about one in ten to three in twenty individuals with carcinoma have little cell respiratory organ cancer. It's conjointly referred to as oat cell cancer. It's nearly solely found in smokers. It grows and spreads additional quickly than non-small cell carcinoma. It usually spreads to different components of the body at an early stage. Lung cancer, like all cancers, will act otherwise in all and sundry, looking at the type of carcinoma it's and also the stage it's in. However, once carcinoma spreads outside the lungs, it usually goes to an equivalent place. The primary place carcinoma typically spreads to is the lymph nodes within the center of the chest. These lymph node area units referred to as medistinal lymph nodes. Carcinoma might also unfold to the lymph nodes within the lower neck. In its later stages, carcinoma could unfold to distant components of the body, just like the liver, brain, or bones.

A number of things could increase your risk of carcinoma. Some risk factors may be controlled, for example, by quitting smoking. Different factors embrace exposure to secondhand smoke, previous radiation, Exposure to inert gas, family history of carcinoma. The carcinoma may be cured if it's detected at an early stage. During this system, we have used machine learning algorithms to find cancer. We have used a 3D convolutional neural network to enhance the accuracy of the system.

2. METHODOLOGY AND IMPLEMENTATION

A. System Design

Fig. 1: Proposed System

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Handwriting Character Recognition using CNN with GUI

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Abstract - *Handwriting recognition is highly researched area from several years with different techniques. In handwriting recognition technique there are two methods one is online method and other is offline method. Image recognition is main aspect of handwriting recognition process. In image recognition size of image , angle of image and quality of the image these are the things taken care of precisely. To make machines more intelligent, the developers are dividing into to technologies like machine learning and deep learning techniques. A human can learn to perform a task by practice and repeating it again and again so that it memorize how to perform the task. Then the neurons in his brains automatically trigger and they can quickly perform the task they have learned. Deep learning is also very similar to this. It uses different types of neural network architecture for different types of problems. Convolution neural Network(CNN) is very effective technique when it comes to image recognition and handwriting.*

Key Words: **Handwriting Recognition, Human Intelligence, Deep Learning, Machine Learning, CNN**

1. INTRODUCTION

Handwriting Recognition is the ability of machine to recognize and predict the human handwritten character. It is a very tedious task for machine because handwritten letters, digits or characters are not perfect and can be made with many different flavors. So this paper is solution in which handwritten characters are recognize and predict with accuracy. Handwriting Detection is a technique or ability of a Computer to receive and interpret intelligible handwritten input from source such as paper documents, touch screen, photo graphs etc. Handwritten Text recognition is one of area pattern recognition. The purpose of pattern recognition is to categorizing or classification data or object of one of the classes or categories. Handwriting recognition is defined as the task of transforming a language represented in its spatial form of graphical marks into its symbolic representation. Each script has a set of icons, which are known as characters or letters, which have certain basic shapes. The goal of handwriting is to identify input characters or image correctly then analyse to many automated process systems. This system will be applied to detect the writings of different format. The development of handwriting is more sophisticated, which is found various kinds of handwritten character such as digit, numeral, cursive script, symbols, and scripts including English and other languages. The automatic recognition of handwritten text can be extremely useful in many applications where it is necessary to process large volumes of handwritten data, such as recognition of addresses and postcodes on envelopes, interpretation of amounts on bank checks, document analysis, and verification of signatures. Therefore, computer is needed to be able to read document or data for ease of document processing.

There are many techniques by using them we can achieve recognition. It involves Convolutional Neural Network(CNN), Semi Incremental Method, Incremental Method, Line and Word Segmentation etc., One of the most effective and prominent way of handwriting recognition is convolutional neural network(CNN). It is a part of deep learning. CNN is most commonly used in analyzing visual imaginary. Convolutional Neural Network(CNN) are composed of artificial neurons.

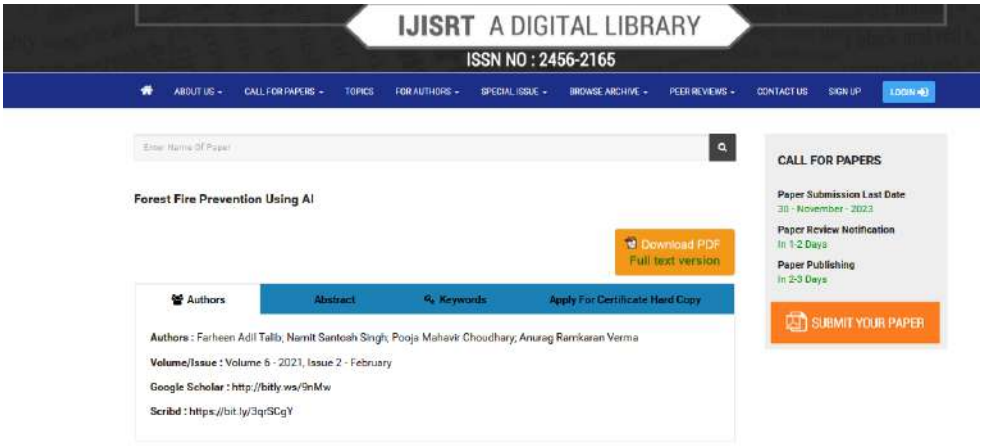
2. LITERATURE REVIEW

Handwriting recognition is a wide field of research. The research on this particular topic is done by many researchers in order to get utmost results. Different researchers used different techniques for image recognition and character recognition.

Kartik Dutta, Praveen Krishnan, Minesh Mathew and C.V. Jawahar [1], This paper proposes framework for annotating large scale of handwritten word images with ease and speed. This paper benchmark major Indic scripts such as devanagri, bangla and telagu for the tasks of word spotting and handwritten recognition using state of the art deep neural architectures. It uses Word Spotting using CNN-RNN hybrid network.

Nikita Singh [2], This paper proposes an approach for recognition of handwritten Devanagari character recognition. The proposed approach is based on the classification of individual characters by using ANN (Artificial Neural Network). The proposed approach may be useful in the application for blind people to read the handwritten contents.

Roshan Fernandes, Anisha P Rodrigues [3], This paper proposing two techniques to recognize handwritten Kannada script, which yields high accuracy. The first technique is by 1.Teseeract tool, and second is by using 2. convolution neural network (CNN). With tesseract tool have achieved 86% accuracy and through convolution Neural Network we achieved 87% accuracy.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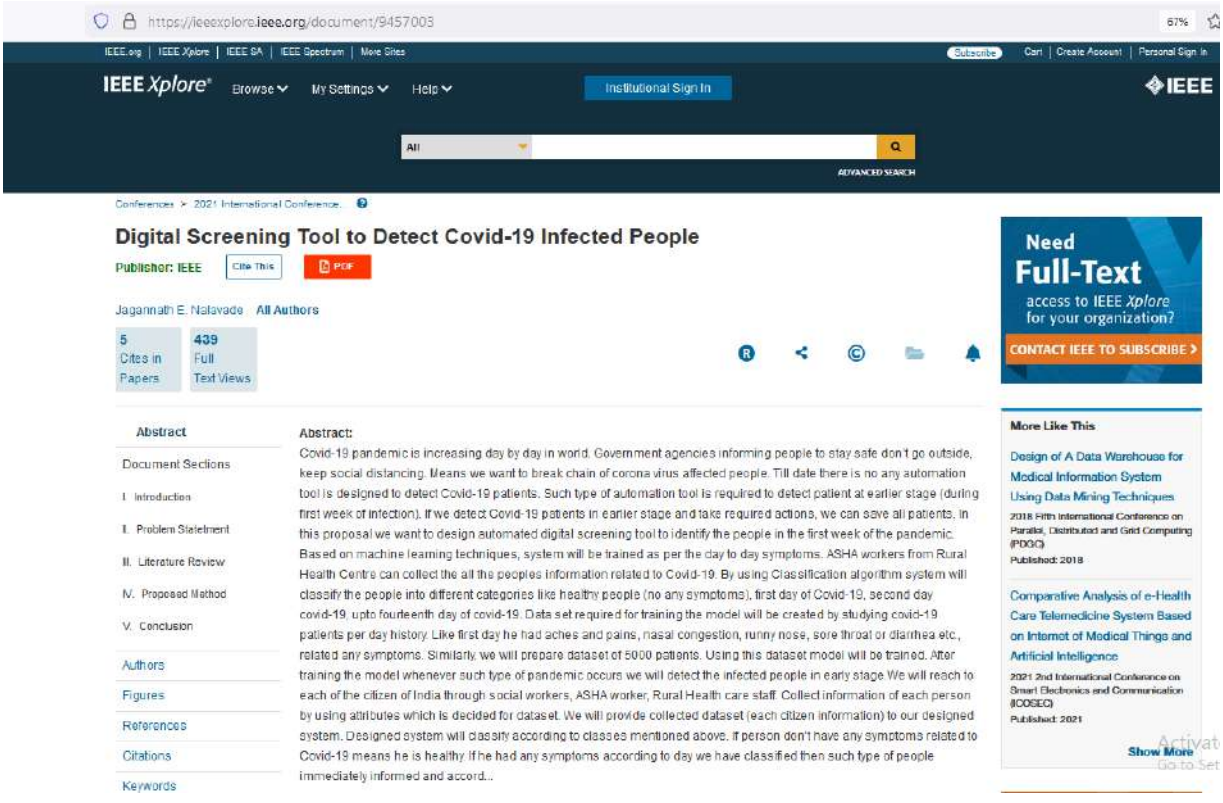
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III. Literature Review
IV. Proposed Method
V. Conclusion
Authors
Figures
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Abstract:
Covid-19 pandemic is increasing day by day in world. Government agencies informing people to stay safe don't go outside, keep social distancing. Means we want to break chain of corona virus affected people. Till date there is no any automation tool is designed to detect Covid-19 patients. Such type of automation tool is required to detect patient at earlier stage (during first week of infection). If we detect Covid-19 patients in earlier stage and take required actions, we can save all patients. In this proposal we want to design automated digital screening tool to identify the people in the first week of the pandemic. Based on machine learning techniques, system will be trained as per the day to day symptoms. ASHA workers from Rural Health Centre can collect the all the peoples information related to Covid-19. By using Classification algorithm system will classify the people into different categories like healthy people (no any symptoms), first day of Covid-19, second day covid-19, upto fourteenth day of covid-19. Data set required for training the model will be created by studying covid-19 patients per day history. Like first day he had aches and pains, nasal congestion, runny nose, sore throat or diarrhea etc., related any symptoms. Similarly we will prepare dataset of 5000 patients. Using this dataset model will be trained. After training the model whenever such type of pandemic occurs we will detect the infected people in early stage We will reach to each of the citizen of India through social workers, ASHA worker, Rural Health care staff. Collect information of each person by using attributes which is decided for dataset. We will provide collected dataset (each citizen information) to our designed system. Designed system will classify according to classes mentioned above. If person don't have any symptoms related to Covid-19 means he is healthy. If he had any symptoms according to day we have classified then such type of people immediately informed and accord...
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Paper Title:	**Dog breed classification using convolutional neural network and transfer learning**
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Abstract: Convolution Neural Networks (CNN) with the help of transfer learning the system used for dog breed classification and detection. It also considers the combination of multiple basic CNN models for dog breed can be classified and give immense improved performances. This model supports the classification of 133 dog breeds whereas capital punishment the model. CNN may be a structure designed to method real-world user-defined pictures. Consider, a dog image is chosen the model can classify Associate in Nursing establish an analysis of the dog breeds, this model is used as a neighborhood of mobile or net app for the real-world and user-definition image. once the image is given to the model for execution, it analyzes if a dog is a gift and returns the estimated breed. during this model, we tend to use a pair of datasets that are dog and human. whereas we tend to execute our scratch model it's impossible to induce high accuracy therefore we tend to come up with the Resnet50 model that has high accuracy share up to eighty-six and higher than roughly that processes information at intervals less time with the assistance of GPU (Graphical Process Unit). The result that occurred has shown Brobdingnagian improvement of accuracy as compared to the scratch model.

Keywords: Convolutional Neural Network, Transfer learning, ResNet50, Dog Breed Classification, Deep Convolutional Neural Networks.

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Effect of fly ash and GGBS on strength and durability of concrete upto 90 days

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Abstract - The researchers have started finding alternatives for the partial replacements for cement. This main study of this paper is on investigating the behavior of M20 concrete by partially replacing the cement by Flay Ash and ground granulated blast furnace slag (GGBS). Fly Ash and GGBS is used to make durable concrete structures in combination with ordinary Portland-cement and/or other pozzolanic materials. Cubes are tested for its compressive strength after 28 and 90 days of curing. The replacement percentages of cement by Fly Ash and GGBS used are 20 and 30 or 60 and 40 percentages for M20 grade.

Keywords - ground granulated blast furnace slag (GGBS), compressive strength formatting

I. INTRODUCTION

A Importance of strength of concrete:

Strength of any structure, or part of a structure, is important, the degree of importance depending on the location of the structural element under consideration. The first floor columns in a high rise building, for example, are more important structurally than a non bearing wall. Loading is more critical, and a deficiency in strength can lead to expensive and difficult repairs or, at worst, a spectacular failure. Strength is usually the basis for acceptance or rejection of the concrete in the structure. The specifications or code. The specifications or code designate the strength (nearly always compressive) required of the concrete in the several parts of the structure. In those cases in which strength specimens fail to reach the required value, further testing of the concrete in place is usually specified. This may involve drilling cores from the structure or testing with certain non-destructive instruments that measure the hardness of the concrete.

B FLY ASH

Now a day the world is witnessing the construction of very challenging and difficult structures, concrete being the most important and widely used structural material is called upon possess very high strength. Fly ash one of the by-products of thermal power plants is one of the most common mineral admixture used in concrete worldwide. Fly ash largely improves the durability of concrete. One of the greatest drawbacks while using fly ash as pozzolanic material in concrete is the early age performance of concrete. The early age strength development of fly ash blended binary concretes shows poor performance than the ordinary concrete. Researchers all over the world are developing Ternary blended concretes by adding a superfine mineral admixture like Micro Silica to the binary blended concretes of fly ash. Micro Silica in the ternary blend improves the early age performance of concrete and fly ash improves the properties at the later age.

C GROUND GRANULATED BLAST FURNACE SLAG (GGBS)

Ground granulated blast furnace slag (GGBS) is the solid waste generated by industry can be used as a replacement material for cement. The utilization of supplementary cementitious materials is well accepted because of the several improvements possible in the concrete composites, and due to the overall economy. To quantify the strength of ground granulated blast furnace slag (GGBS) and high volume fly ash (HVFA) at the various replacement levels and evaluate their efficiencies as concrete. In recent years GGBS when replaced with cement has emerged as a major alternative to conventional concrete and has rapidly drawn the concrete industry attention due to its cement savings, and cost savings, environmental and socio-economic benefits. The present study reports the result of an environmental study, conducted to evaluate the strengths and strength efficiency factors of hardened concrete by partially replacing the cement by various percentages of ground granulated blast furnace slag and high volume fly ash for M20, M40 and M60 grades of concrete at different ages. The overall strength efficiency was found to be a combination of general efficiency factor, depending on the age and a percentage efficiency factor, depending upon the percentage of replacement.

Aim

To find out compressive strength of concrete upto 90 days with partial replacement of Fly ash and GGBS with cement quality

Objective

- To study the variation in compressive strength of concrete with respect to age.
- To study the comparison between plain cement concrete, fly ash cement concrete and GGBS cement concrete with respect to compressive strength.

II. METHODOLOGY

To determine the mix design for M20 grade of concrete.

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Efficient Combination of Mineral Admixture (Reactive and Micro Filler) for High Strength and Durable Concrete

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Abstract - *In this paper an experimental investigation is carried out on High Strength Concrete by using an appropriate combination of reactive and micro filler mineral admixtures. The analysis of result was carried out for water demand, heat of hydration, setting time, bleeding, and rate of reactivity, strength and density to find the best combination of the two. The experimental work carried out by replacing cementitious material with an appropriate proportion and combination of reactive and micro filler mineral admixture. The behavior and properties of concrete is recorded at every stage. Important changes were noticed in workability and compressive strength of concrete at various stages (3, 7, 28 and 56 days). The results are very encouraging for preparing high strength and durable concrete using combination of reactive and micro filler mineral admixture in suitable proportion.*

Key Words: *Durable concrete, reactive and micro filler mineral admixtures.*

1.INTRODUCTION

The challenging nature of modern infrastructures and durability requirement has gain the attention of concrete technologist to produce not only high strength but also durable concrete which can tackle severe environmental conditions in its life span. Due to the limitations of cement as a binding material addition of mineral admixtures has gain popularity in attempt of producing such concrete. The mineral admixture plays the role as reactive and or micro filler material in concrete. In this process they affect workability, heat of hydration, reactivity, density. Each mineral admixture influences the properties of concrete differently.

1.1 Admixtures

Fly Ash is residue from the combustion of pulverized coal which is collected either mechanically or by electrostatic separators. Fly Ash reduces the heat of hydration in concrete its pozzolanic action is slow and reduces the rate of gain of strength at early stage. It imparts strength to concrete predominately by improving the paste pore structure through filler effect and some amount by pozzolanic reaction with Calcium Hydroxide $Ca(OH)_2$ and converting them into additional Calcium Silicate Hydrate (C-S-H).

Metakaolin is the anhydrous calcined form of the clay mineral kaolinite. The particle size of Metakaolin is smaller than cement particles but not as fine as silica fume. The production process of Metakaolin is closely controlled so as to obtain a pure and reactive product. These react with calcium hydroxide $Ca(OH)_2$ produced during the hydration of cement to form calcium hydro silicate (C-S-H) and calcium hydro alumina silicate.

Silica Fume is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production. When silica fume is added in concrete, much more active SiO_2 react with $Ca(OH)_2$ to produce C-S-H in the secondary reaction. Silica Fume being finer than the other cementitious material works as filler in filling the voids, reducing the porosity and increasing the density of the structure. Both the chemical active function and physical filling functions act together to increase the strength of concrete, especially the early strength.

Ground granulated blast-furnace slag (GGBS) is a non-metallic product consisting of silicates and aluminates of calcium and other bases. It imparts strength to concrete predominately by improving the paste pore structure through micro filler effect and some amount by pozzolanic reaction with Calcium Hydroxide $Ca(OH)_2$ and converting them into Calcium Silicate Hydrate (C-S-H).

1.2 METHODOLOGY AND MATERIALS

The combinations of reactive and micro filler mineral admixtures for producing high strength and durable concrete is identified as Micro Silica + Fly Ash (M2), Micro Silica + GGBS (M3), Metakaolin + Fly Ash (M4) and Metakaolin + GGBS (M5). A design mix of M60 grade (M1) as a reference mix and four sets of each combination with different proportion are casted. Compressive strength test is performed on the casted cubes at 3, 7, 28 and 56 days and the results of the combination mix are compared with reference design mix of same grade. A conclusion is derived from the results and an efficient combination for high strength and durable concrete is suggested.

The table given below gives the percentage cement replacement with different proportions of additives.

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Hydrological Modelling and Analysis of Water Logging Areas for Panvel Region: An Innovative Approach

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Abstract - *Flood disasters in the last decade have confirmed that the risk from flooding has increased significantly worldwide. Flood is a natural disaster which is caused due to heavy rainfall, melting of snow area, increased water level in natural bodies, etc. which causes negative impact on environment. Due to urbanization, catchment areas are covered which increases flood peak and volume in less time. Flooding leads to loss of life, loss of economy, structural and non structural losses. Panvel region is considered as the catchment area in this study. It is segregated into a number of land use pattern such as open area, road area, and grassy area which is modeled by using Storm Water Management Modelling (SWMM) software based on different land use in the catchment. Various Best Management Practices (BMP) has been introduced to reduce runoff depth for water logging areas in Panvel region. By treating this runoff water, small water requirement can be fulfilled and can be supplied to the villages, cities or industries.*

Key Words: Waterlogging Areas, Panvel, SWMM, DEM, Google Earth, BMP; Rain barrels, Holding pond, Detention tank.

1. INTRODUCTION

Stormwater runoff can be defined as "the water that flows over the land from rainfall during or after a storm event or as a result of snowmelt" The physical and chemical characteristics of stormwater runoff change as urbanization occurs .Over the years, the trend in India has been toward increased urbanization Indian census 2001 figured 285 million people stay in 35 metro cities, and is estimated to cross 600 million with 100 metro cities in 2021. The runoff from built up areas within cities is generally collected with conventional drainage systems and finally discharged into a water body. In most urban areas, conventional stormwater management has led to increasing environmental and economical problems. The conventional system is designed for a particular rainfall and is inadequate to cater to higher rainfall intensities. Hence the conventional system fails and cause flooding results in tangible and intangible losses. The term "stormwater best management practices" implies a comprehensive approach to the planning, design, implementation, and operation of stormwater drainage improvements. The purpose of the best management approach is to develop effective drainage systems that balance the objectives of maximizing drainage efficiency Urbanization results in elevated stormwater runoff, greater and more intense streamflow. Low Impact Development (LID) are used to mitigate these effects of urban land use by retaining large volumes of stormwater runoff (water quantity). Best management practices are use for controlling runoff by using different LID techniques, such as rain water harvesting, inlet control, detention basin.

2. NEED FOR STUDY

Maximum Flood losses are caused due to the stormwater; It means when the rainfall takes place. Due to heavy rainfall, runoff is increased on the ground surface this creates a problem like economic losses, tangible losses, intangible losses. To avoid this loss it is necessary to mitigate such runoff which causing a flood. By using traditional methods floods should be mitigated but it can be found that it is not applicable for the urban areas.In most cities in India, the runoff from roads, buildings and other urban areas, is directed to conventional drains/ conveyance systems. During the rainy season, it can be found that these drainage systems are exceeded hence that causes floods.This thesis aims to study flood problems in complex urban areas. A case study of a Kalundre river catchment in the region of Panvel has been chosen as it covered wider aspects and complexities related to urban flooding in the Indian environment. The study targets to integrate the flood management aspects with innovative methods and their application in the Indian scenario. In India from the last 10 years the major problem of the flood is arising in Mumbai, Uttarakhand, Bihar.so it is necessary to find sustainable solutions to mitigate the flood.

3. METHODOLOGY

In this study we have taken rainfall event from 10th July 2019 to 10th August 2019 which has cross highest peak during that period. SWMM software is the hydrological modelling software which can calculate rainfall to runoff process.

Assessment of flood disclosure had been done by combining existing methodologies and some innovative techniques. This section provides introduction to the methods used in the study and the discussion on analysis of non-structural and structural flood management measures. This section briefly describes the methods SWMM uses to

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Reuse of Waste Water by Low Cost Method

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Abstract - In recent years water pollution problems has arised in metropolitan region in India. In this study Rasayani Region is considered which is situated in Raigad District. Waste Water Parameter such as BOD, COD, are calculated from various areas of Rasayani Region. So by Analyzing and studying BOD, COD, method of treatment has been suggested. Low cost sanitation techniques are used to minimize main constituents of water pollution. Water Conveyance system from Rasayani to Treatment plant is designed for this study and found to be economical. The stabilization pond is designed for waste water treatment to reduce organic content. As a result this will allow the key objective of reuse increasing the water resource for various purposes such as water for industries, domestic and for public use.

Index Terms - Low cost technique, Stabilization pond

I. INTRODUCTION

Throughout the last two decades, municipal wastewater reuse has emerged as an important and viable means of supplementing dwindling water supplies in a large number of regions throughout the world. In many instances, reuse is also promoted as a means of limiting wastewater discharges to aquatic environments. Reclamation and reuse hazards are usually defined according to standards issued or recommended by local authorities or international agencies.

In examining the rationale behind such approaches, several inconsistencies are apparent. These include agreement on key parameters, philosophical differences in the approaches taken to risks assessment and management, the adequacy of control parameters, a lack of definition of appropriate sampling points, and the number of samples and analysis necessary. Successful reclamation and reuse practices require careful planning steps, economic calculations, and detailed social considerations and assessments. Then individual scenarios must be established for the correct comparison of the possible alternatives, including all the data needed to reach a true comparison, comprehensive evaluation

and finally, a correct decision.

From the 'zero scenario' (no reuse) to theoretically more complex and expensive scenarios (e.g. reclamation using reverse osmosis), adequate tools are required to help stakeholders consider the best options for improved management of water resources. Among the available tools, decision support systems are essential for evaluating knowledge. However, the effectiveness of such processes will depend on the thoroughness of preliminary studies undertaken to adequately characterize the necessary technologies and schemes. As public health concerns are usually among the main constraints for reuse, risk assessment, based on public health hazard calculations, is an important basis for several definitions in reclamation and reuse projects.

II. NEED FOR THE STUDY

Fisheries

Clear and crystal water is critical to plants and animals which live in water. This is important to the fishing industry, sport fishing enthusiasts, and for many operations.

Wildlife Habitats

Our rivers and ocean are teem with life which depends upon shoreline, beaches and marshes. They are critical habitats for thousands of species of fish and other aquatic life. Migratory water birds shift for the purpose of resting and feeding.

Recreation and Quality of Life

Water is great playground for us all. The scenic and recreational values of our waters are reasons many people choose to live where they do. Visitors are drawn to water activities for recreation purposes.

Health Concerns

If it is not properly cleaned, may carry disease. Since we live, work and play so close to water, harmful bacteria have to be removed in order to render water safe.

It's a matter of caring for our environment and health.

Real Time Water Leakage Monitoring System Using IoT Based Architecture

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ABSTRACT - Water is one of the most valuable resources that is used globally. Many people across the globe lack access to clean consumable water, as only 3 % of fresh water is available for use. Urbanization and Industrialization are the main reasons for the water shortage. Apart from urbanization and industrialization, leakage in water distribution pipelines is the major concern for water shortage if not detected at early stage. Leakage can cause much damage to the building structures and it also leads to a huge loss of consumable water when supplied through water pipelines. In recent years, many studies have been conducted to develop an advance technology for better water management. As a result, a new automated technique, Internet of Things (IoT) is introduced that can connect the actual physical things to Internet. In this paper an attempt is made to illustrate IoT application through an implementation of water leakage detection and monitoring system. This paper emphasis on how sensor system can monitor, detect and locate the leakages in the pipeline system. This research also aims to develop a small scale prototype for real time water leakage alert system and to validate it through experimentation. An intelligent sensor network system consisting of flow sensors and a set of active sensor network platform is used to monitor and detect the leakage in pipelines. The flow sensors provided in the pipes gather the data related to discharge through pipelines. The data collected by sensors is processed by microcontroller- Arduino Uno. Finally, the processed data is monitored on internet using cloud computing.

KEYWORDS: —*Leak detection; flow sensor; Arduino uno; IoT; pipeline.*

I. INTRODUCTION

Water is the most important, essential and limited natural resource responsible for life on earth (Wagan et al, 2013; Kalhoro, 2016). Accordingto U.S Geological Survey Agency, around 97% of total water on the earth is found in oceans and only 3% is available as fresh water for use. Hence water is the basic need for all living things on earth. Water is used for various purposes such as drinking, washing, cooking, cleaning and many other things. It means around 150-250 gallons of water is used by a person daily [illegible] household works (Hossain et al, 2015). In India, as a result of increase in population, more people are depending upon this limited resource and this is why it is extremely important to save & use the water carefully(Reddy et al, 2013;Singh et al, 2013). As per literature survey, more than 1.2 billion individuals lack access to clean consumable water worldwide (Hegde et al, 2016). Urbanization and industrialization is considered as the major reason for water shortage but apart from these reasons, leakage in water pipelines are also major concern for water crisis. In Mumbai city, the leakage rate is reported around 70% because of pipeline leakages (). According to the Environmental Protection Agency, due to water leaks in infrastructures, around 1 trillion gallons of clean and treated water are lost annually. In addition to wastage of water, leaking pipes in buildings can cause some other problems like indoor flooding, wall deterioration, weakening of floor strength, reduction in water pressure in the pipeline etc. The building leakages are considered to be common but it is important to understand the causes and measures for prevention. The basic requirement of a building is to remain dry as far as possible. If this condition is not accomplished, the building may become unsafe from the structural point of view Hence it is important to protect the premises from water damages by implementing water leakage monitoring system in early stages itself. Development of a proper water management system is considered as a complex and complicated due to the slower implementation of technology and aging infrastructure. In developed countries, high range acoustic devices are used to find sounds and vibrations developed in the pressurized pipes and thereby water leakage is detected while in developing countries, leakages are found only when it is visible on the

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E-Waste :An Alternative to Partial Replacement of Coarse Aggregate in Concrete

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Abstract—Globally, the management and disposal of E-waste is raising serious concerns as it is non-decomposable and hazardous to environment. One of the best management practices of E-waste is its reuse in concrete as E-Waste concrete (EWC) which will also be a partial solution to escalating cost of construction material. The significance of this research is to resourcefully use E-waste in concrete by achieving optimum performance by testing physical, workability & mechanical properties. The E-waste generated at Pillai HOC College of Engineering and Technology (PHCET), Rasayani was used as partial replacement of coarse aggregate (CA) in combination with fly ash. By replacing 0-30% of CA, concrete cubes were cast and slump cone test for determining workability and compression strength test were conducted after 28 days. The results indicate a remarkable increase in workability and strength of EWC thus making it feasible to use EWC as light weight concrete.

Keywords ***—E-waste, E-waste concrete, Compressive strength of concrete, Reusable Material, Sustainable Material, Strength optimization***

I. INTRODUCTION

The rapid growth of technology, up gradation of technical innovations and a high rate of obsolescence in the electronics industry have led to one of the fastest growing waste streams in the world which consist of end of life Electrical and Electronic Equipment (EEE). The countries of the European Union (EU) and other developed countries to an extent have addressed the issue of e-waste by taking policy initiatives and by adopting scientific methods of recycling and disposal of such waste. The EU defines this new waste stream as 'Waste Electrical and Electronic Equipment' (WEEE). Since there is no definition of the WEEE in the environmental regulations in India, it is simply called 'e-waste'. Considering the current scenario, prohibition or even reduction in use of electrical items is not possible. With the advancement of technology, the demand and consumption of electronic items is also increasing at an alarming rate and with it comes the problem of disposal of these waste EEE (WEEE). E-waste is one of the parts of [illegible]. Several tonnes of E waste need to be disposed per [illegible]. Conventional landfill method is not an environmental friendly solution and the landfills are also reaching their maximum capacity. Mumbai leads the country for generating the highest E-Waste, followed by Delhi and Bangalore. An estimated 50 million tons of E-waste are produced each year. The Environmental Protection Agency estimates that only 15–20% of e-waste is recycled, the rest of these electronics go directly into landfills and incinerators. According to United Nations report, India is the fifth biggest producer of e-waste in the world, discarding 1.7 million tonnes (Mt) of electronic and electrical equipment in 2014 and warned that the volume of global e-waste is likely to rise by 21 per cent in next three years.

1.1 E-waste generation

All over the world, the quantity of electrical and electronic waste produced each year, especially computers and televisions, has attained startling proportions. Globally, about 20-50 MT (million tonnes) of e-wastes are disposed each year, which accounts for 5% of all municipal solid waste. Even though no explicit certified data exists on how much waste is generated in India, or how much is disposed off, there are some analysis available based on independent studies conducted by the NGOs or government agencies. According to the Comptroller and Auditor- General's (CAG) report, over 7.2 MT of industrial hazardous waste, 4 lakh tonnes of electronic waste, 1.5 MT of plastic waste, 1.7 MT of medical waste, 48 MT of municipal waste are generated in the country annually. In 2012, the Central Pollution Control Board (CPCB) estimated India's e-waste at 1.47 lakh tonnes or 0.573 MT per day. According to the Comptroller and Auditor- General's (CAG) report 2015, there are 148 registered dismantlers/ recyclers in India. A study released by the Electronics Industry Association of India (ELCINA) at the electronics industry expo Components Nepcon 2009 had estimated the total e-waste generation in India at a whopping 4.34 lakh tonnes by end of 2009. The CPCB has estimated that it will exceed the 8 lakh tonnes or 0.8 MT mark by 2012[3]. There are 10 States that contribute to 70 per cent of the total e-waste generated in the country, while 65 cities generate more than 60 per cent of the total e-

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Research Article

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Analysis of Changes in LULC of Western Ghat by Comparing NDVI and NDWI

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Abstract

1,50,000 km² of the area contains dense forest in Indian Western Ghats. Western Ghats is one of the world's ten "hottest biodiversity hotspot" which spread over six states. There is a gradual change in land and in water bodies of Western Ghats which is affecting the surrounding.

The research aims to compare and analyze the changes in land and in wet bodies by using Landsat series for the year 1988-2018. The Landsat data received for 1988, 1998, 2008 and 2018 is showing numerous differences in forest and water resources. The changes are studied by using software and by using Normalized Difference Vegetation Index (NDVI) and Normalized Difference Water Index (NDWI) and also impact of forest changes on Western flowing rivers.

The overall per cent change in vegetation is found to be 14.19. Majority of change is observed in Tamil Nadu state by 21.80%. For water bodies the change is observed as 3.307% overall. Maximum changes are observed in Tamil Nadu state by 12.86%.

The changes from past and present of land can be used to predict the future changes in land and in water bodies and the impact of the same on the surrounding. This will be the contribution to nature for the conservation.

Keywords: Landsat; LULC; NDVI; NDWI

Introduction

Present scenario

There is a huge transformation in Western Ghats land due to natural [illegible] or other substances like increase in cattle population, [illegible] rural poverty, and increase in human, increment in [illegible] which [illegible] affecting the nature's beauty which results in deforestation which further affects the water streams [1]. Noticeable changes have taken place in land use and land cover which further affects the atmospheric [illegible] due to reciprocity between water and forest [2]. As a result of [illegible] development project and agricultural changes a very [illegible] land cover changes has taken place [3]. Quick changes and [illegible] monitoring it might be difficult in some region of the Western Ghats. It is said to impossible to study areas with huge amount of changes and with large spatial scales with time consuming ground survey. Qualitative and quantitative availability of the resources are required with detailed study for the conservation and preservation of [illegible] guide [4]. But in this case RS and GIS play an important role. RS and GIS are progressively valued for providing [illegible] knowledge on land characteristics [5]. To study the differences and similarity in result and methodology of land use and land cover data is the objective of the thesis [6].

Need of study

Water is a meaningful part of each and every individual living on this earth. Forest is what beauty of the nature. Both should get priority for the conservation. Indian Western Ghats is known as an India's top ten "hottest biodiversity hotspot". Different species of flowering plants, non-flowering plants, bird species, mammal species, insects species, and river system is also originated in Western Ghats are Godavari, Krishna, Tungabhadra. For such an extravagant range it seems difficult to take some actions regarding conservation or to find out solution on negative changes. Changes in Western Ghats have been a trouble from varying years [7]. The extended rate at which climate is changing it is becoming a serious portent for entire ecosystem and biodiversity [8]. Land use changes have imaginably large beard on water resources [9]. While production of resources which are essential for living beings the LC changes distribution, negative consequence curtailing, location monitoring, becomes a major challenge for decisions of forest officers, management of land and economic planning and it is necessary to stabilize the link between decisions of forest officers and subsequent for land management [10]. With a large enhancing ability of remote sensing to capture the discrepancy it is achievable to distinguish the changes in Western Ghats (WG) [11]. Development and Evaluation of vegetation and water index requires accountable measurements of the present and past land cover and land use parameters as changes in those parameters can be used to determine the ecological changes existing in a vegetation and water index [12]. RS and GIS help to provide info about land use and land cover and also detection of land changes. Statistically analyses of RS data to judge changes in resources, for water bodies and forests, over time has been in practice for decades [13]. The relationship between vegetation and water index may be further utilized for detailed study of forest variety [14]. By using long term data also changes can be detected.

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Estimation of Water Balance Components of Watersheds in the Manjira River Basin using SWAT Model and GIS

Akshata Mestry, Raju Narwade, Karthik Nagarajan

Abstract: This study mainly focus on hydrological behavior of watersheds in The Manjira River basin using soil and water assessment tool (SWAT) and Geographical information system (GIS). The water balance components for watersheds in the Manjira River were determined by using SWAT model and GIS. Determination of these water balance components helps to study direct and indirect factors affecting characteristics of selected watersheds. Manjira River contains total 28 watersheds among them 2 were selected having watershed code as MNJR008 and MNJR011 specified by the Central Ground Water Board. The SWAT input data such as Digital elevation model (DEM), land use and land cover (LULC), Soil classification, slope and weather data was collected. Using these inputs in SWAT the different water balancing components such as rainfall, baseflow, surface runoff, evapotranspiration (ET), potential evapotranspiration (PET) and water yield for each watershed were determined. The evaluated data is then validated by Regression analysis, in which two datasets were compared. Simulated rain data from SWAT simulation and observed rain data from Global Weather Data for SWAT was selected for comparison for each watershed.

Keywords — Water balance components, soil and water assessment tool (SWAT), Digital elevation model (DEM).

I. INTRODUCTION

Water resource management has proven important factor from several aspects, such as irrigation, development of water-bodies for future needs, protection of water resources from pollution and also controlling quality as well as quantity of water. The different climatic conditions and human activities are changing water resource characteristics such as land cover, land use, soil condition, surface runoff and rainfall [2]. For effective water resource management first of all various hydrological components and water cycle must be studied and taken into consideration, which includes evapotranspiration, transpiration, condensation, precipitation and runoff. Water scarcity is most common problem in many countries throughout the world and so in India. To overcome this problem proper water resource management is essential.

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The Marathwada region in Maharashtra, India faces water crisis every year due to depletion of water level. To find out the solution for such problems detailed study of water resources on smaller scale must be done [11]. The study area includes two watersheds from Manjira [illegible] (watershed code MNJR008 and MNJR011) [19]. These watersheds come under Manjira river which is the tributary of India's second largest river Godavari and flows through some parts of Marathwada region. The various GIS data such as soil data, LULC, DEM used as inputs in SWAT to determine water balance components of study area. The water balancing components helps in water budgeting, gives brief idea about watershed characteristics, this further can be used to predict the availability of water and so can help in water resource management [14].

II. LITERATURE REVIEW

In this detailed literature survey was done to study and understand the different uses of SWAT, GIS and similar softwares in water management. With the help of SWAT model and geospatial techniques assessment of water balance of watershed in Kuttanad sub basin and Karuvannur river basin was done by Sandra George, Sathian and K.K. (2018) [13]. Frederick Ayivi and Manoj K. Jha (2018) Estimated Water yield and water balance in Bandy Fork-Buffalo creek watershed in North Carolina, they also assessed the performance of SWAT for future prediction of water balance and water yield in other watersheds of North Carolina [5]. Hayal Desta and Brook Lemma (2017) quantified and compared water balance components, discharge of feeder river and evapotranspiration in Lake Ziway watershed, Ethiopia using SWAT model [6]. O.M.M. Abdelwahab et al. (2018) compared simulation of soil erosion in Mediterranean watershed generated by two most widely used models, SWAT Soil and water assessment tool and Annualized agricultural Non-point source (AnnAGNPS) [10]. Muhammad adnan et al.(2019) quantified water budget of Nam Co lake by using SWAT (soil and water assessment tool) coupled with DDM (Degree day model) over period of 2007 to 2013 [8]. Daniel rivas-tabares(2019) assessed the water balance of [illegible] watershed, they assessed land use in detail, water demand for period 2004-2014 of agricultural land using SWAT [4]. Natalja cerkasova et al.(2018) developed hydrology and water quality model for Neman large transboundaries watershed using SWAT, they used customized MATLAB scripts for HRU (hydrologic response unit) production also assessed SWAT model setup approaches for HRU definitions [9].

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Determination of Water Budget of the Lower Godavari River Basin Using GIS and SWAT

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Abstract - To study the hydrological cycle, water budget components are very important. Water budget also helps us to identify periods of deficit and excess rainfall and calculate the availability of water at any given time. Water budget components include precipitation, base flow, evapotranspiration, change in terrestrial water storage (which include both subsurface and surface water storage) and surface run off. This paper depicts how these water budget components can be estimated using Geographical Information System (GIS) and Soil and Water Assessment Tool (SWAT). The study area selected for this purpose was the entire Lower Godavari Basin, India. SWAT inputs such as Digital Elevation Model (DEM), Land Use/Land Cover (LU/LC), soil classification, slope and weather data was used and water budget components were obtained as output and analyzed. The simulated data obtained was then compared with the observed data and coefficient of determination, R^2 between the simulated data and observed data was found to be very high, which validated the results.

Keywords - Digital Elevation Model (DEM), Evapotranspiration, Land Use/Land Cover (LU/LC), Soil and Water Assessment Tool (SWAT), Water Budget, Coefficient of determination.

I. INTRODUCTION

Water is very precious, its presence affects how and where plants and animals exist on earth. All life forms require water and due to increasing population there is a competition for water among humans as well as between humans and other life forms. To resolve these problems decisions based on science and social values need to be taken, hence study of hydrological cycle becomes very important. [1]

Hydrological cycle refers to the continuous circulation of water and includes processes like evapotranspiration from the surfaces of seas, lakes, leaves, etc which gets stored in the form of clouds and when these clouds become heavier and denser, condensation occurs and water comes back to the land or oceans in the form of liquid or snow [2]. The relation between the input and output of water in a region, such as a watershed, is called water budget.

Water budget helps us to evaluate water supply, its sustainability and availability. The rate with which the water flows in and out of the given area and rate of change in stored water, balance each other. Water budget also helps us to identify periods of deficit and excess rainfall and indicate the availability of water at any given time [1]. Most important components of water budget include precipitation, runoff, base flow, change in water storage and evapotranspiration. [3]

The study area selected was the entire Lower Godavari Basin and the software used for the determination of budgeting components is Soil and Water Assessment Tool (SWAT). GIS is used for getting various SWAT input data such as DEM, LU/LC and soil data. [4]

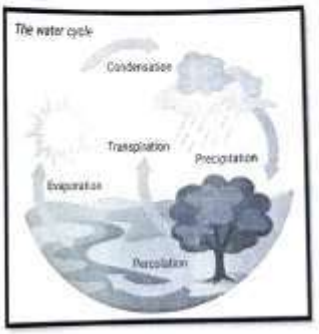

Fig 1: Water cycle (Source: worldatlas.com)

II. LITERATURE REVIEW

A detailed literature survey was carried out which showed that GIS and remote sensing in water balance study is very helpful in determining the periods of moisture surplus and moisture deficit for a basin. The technique involved use of average potential evapotranspiration, average monthly rainfall and vegetation and soil characteristics. Rovick P. Tanfe and Arnucla P.(2017) [5] performed hydrological modeling based on GIS data on raster cells to identify and classify the hydropower potential sites in Misamis Occidental in the Philippines. Input data included DEM,

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Land Change Prediction using Markov Change Multi-Layer Perceptron in Navi Mumbai, Maharashtra, India

Sandip P. Patil, Manisha B. Jangade

Abstract: *Long-term evaluation of land change and future prediction change is extremely important for planning and land use management. This research conducted for the analyze future prediction change in the study area Navi Mumbai. For this work we taken. Thus, the change detection obtained from land use and land cover assist in most favourable solutions for the future planning, implementation, and observance of development schemes. To meet the increasing demands of human need, land management is required. In this work for upcoming predict year, Markov change model is used for simulating 2028 year. It will give vital and useful information on future development and planning. And also, is easy for continuing to monitor land change for the large areas due to natural human activities and the effect of natural resources.*

Index Terms: *Land use and Land cover change, Change detection, Spatial modelling, Markov Multi-Layer Perceptron*

I. INTRODUCTION

Land cover change is suffering from many factors linked to the spatial-temporal thing, for example, proximity, environmental condition, and socio-economical conditions. The most important fears of the world, now current situation change in the environment that are caused by human manipulation leading to local and global climate change due to deforestation, expanding farmland, and urban area (Bidai et al.,1995, J.S. Rawat et al. 2013). Land use/Land cover (LULC) modelling is detailing the first development is the area and transformation in the environment due to human interference. It is one of the most critical points leading to global warming. Sometimes human interference activity mailed in development causes. Many lands use study on environment uses spatial and temporal social approach to use study investigate. Subsequently, land use by human and change land type is the main fact of environment changes (Bayomi et al., 2016).

Throughout the last few decades, some studies searching for the most effective means of predicting land cover change. Land change modelling is calculating by three different sorts of the model such as the empirical/statistical model, dynamic model, and model that is hybrid. A hybrid model is known as better modelling than other modelling as it combines dynamic model and empirical statistical model (Dawn C. Parker, et al. 2003).

High urban intensity is found in area different near to facilities like public transportation and good infrastructure. Development in any area is depending on connectivity and location near road (De Chiara 2001). Finding LU/LC cover changing from the past to the upcoming can be a vital step towards identifying probable effects. The models for analyzing and simulating the LU/LC offer an appropriate tool for distinguishing the special pattern and dynamics of land use/cover (Gong et al., 2015, Jiang et al., 2015).

Markov chain method is developed for the time-based Multi-Objective land distribution, multi-criteria analysis and cellular automata (CA) is used particularly for probable land use source. focus of results on the main three the primary was formed through involved variation inside the land cover categories, the second was conducted utilizing just two land cover maps for the standardization of method, and therefore the third was created supporting the idea that temporal multi-objective land allocation (Asrya et al., 2010, H.A. Bharath, et al. 2017).

Primarily, the lowest common multiple is on the idea of CA-Markov that assesses land use/cover alterations between two spells, measures the changes, and depicts the results with completely different charts and maps. Afterwards, scattered related change possible maps it formulates future Land Use and Land cover maps (Roy et al., 2015, Thomas Houet, et al. 2007, M. E. Mirici et al., 2017).

Therefore, this paper aims to analyze the last land use changes in the area, as well as simulate the changes in the future years using integrated Markov Multi-Layer Perceptron model.

II. STUDY AREA

Navi Mumbai is located in India, Maharashtra state, Asia continent. Latitude coordinate is 19.077065° N, and longitude is 72.998993° E and elevation is 14 meters above sea level. Temperature changes from 22°C to 36°C. Winter time is going in between 17°C to 20°C and summer range up to 36°C to 41°C. The total area of Navi Mumbai is 344 km^2 and this area is divided into 14 nodes is divided into different sectors. Location of the study area is shown in figure 1 and Figure 2.

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Investigational Study Of Mwcnt's/Silicon Oxide Nanoparticles/Epoxy Resin Nanocomposite Coating On Mild Steel For Anticorrosion And Mechanical Properties

Sandeep.V.Gujjar, Akshay D. Prajapati, Dr.Anand, M. Hunashyal Dr. Shankar Hallad, Sunil Meti

Abstract: Weathering of mild steel known as corrosion, affects the life span of engineering structures adversely. An attempt to enhance the durability of structure using Nanotechnology carried out in the present experimental work. Multi- Walled Carbon Nano Tubes were prepared by CVD method. For ultrasonic dispersion of Multi- Walled Carbon Nano Tubes (MWCNT's) and Silicon Oxide Nano particles were simultaneously ultrasonicated. The MWCNT's/ Epoxy Nano composite coating effect on mild steel for corrosion behavior and mechanical properties were investigated. The anticorrosion property of the Nano composite coating was determined by immersion as well as salt spray method. Mechanical properties like tensile strength and scratch hardness were evaluated. to compare with the plain mild steel and neat epoxy coated mild steel. For surface characterization, FESEM was conducted. The addition of MWCNTs and Silicon Oxide Nano particles in Epoxy resin improves the anticorrosion and mechanical properties of mild steel.

Keywords: MWCNT's, Silicon Oxide Nano particles, Epoxy Resin, Anticorrosion, Mechanical Properties, Coating

INTRODUCTION:

process of reduction of strength of metal by the rounding environmental conditions through chemical ction on the surface of the metal is known as corrosion. rosion is a natural process which is an electrochemical ction which takes place when ferrous material is osed to chemicals and moisture content in the nosphere. The structure is adversely affected by rosion and it poses a great hazard in the construction greening. Due to corrosion, steel structure erodes d collapses. Many oil pipelines get damaged, leading to emical plant leakage, etc., Due to corrosion, structure intenance becomes expensive . Corrosion results in loss structural strength reduces ductility and reduced shear pacity.(Gupta et al. 2017).In order to prevent the uctures from undergoing corrosion , it is necessary to low corrosion resistance methods. Multi-walled carbon no tube (MWCNT) has highest quality of properties and used in large number of commercial applications. WCNT is a good conductor of electricity when integrated o a composite structure. It has high aspect ratio where length is 100 times more than diameter (Beltram 2017). has excellent tensile straight. However, strength can be creased with thermoplastic or thermo set compounds. WCNTs as woven or non-woven fabrics material or resin planted Bucky paper when immersed with thermo set ins have shown significant enhancement of hardness d quality of composite structures. like for example in golf b shafts and structural laminates for aerospace plication.(Shahriary et al. 2014) The organic and in-ganic material based on silica has many advantages, i.e., xcellent barrier performance, good strength, and inherent) processing. It is mainly used for catalysts, ical devices, protective coatings and composites. Nano icon oxide (SiO_2) is also called as silica, which is an ide of silicon with chemical formula SiO_2. Sand is dominant to be silica. Silicon oxide nano particles are also lled as silica Nano-silica. The chief applications of silica o particles are that they are used an additive for plastics d rubber. They are used as strengthening fillers for construction composites (AZoNano 2013). The performance of resin-based material can be improved by diapering the SiO_2nanoparticles into the resin material. The improvement includes increased water resistance, strength, elongation, anti-aging and better surface finishing properties of the materials. (Cheng et al. 2018) Epoxy resin (E) material is identified by its high electrical properties and chemical resistance. It has low absorption of moisture and good strength. Glycidyl epoxy and Non-glycidyl epoxy resins are two important classifications of epoxy resins. Epoxy has excellent mechanical strength. It is comparatively cheaper. Epoxy resin possesses extremely good chemical resistance. It resists temperature as well. It is an ideal chemical used in electrical systems, electronics and other industrial applications. a Epoxy resin possesses excellent mechanical strength and low curing contraction. The most popular Nano fillers are; Nano silica, Montmorylonites, Fullerenes, and Carbon nanotubes. (Srivastava 2011)

2. EXPERIMENTAL PROGRAMME

2.1 Materials:

Materials required are Multi-walled carbon nano tube's (MWCNT's), Nano silicon oxide (SiO), Epoxy resin (E) (Fine coat EP 200/A) and hardener (Fine coat EP 200/B), Mild steel, Thinner (Thinner-643), Acetone, etc. Multi- Walled Carbon Nano Tubes were prepared by CVD method. Epoxy resin (FINECOAT- EP 200A & B) is a two- component epoxy clear lacquer, cured with polyamide hardener. It cures at room temperature (above 10°C).Multi -Walled Carbon Nano Tubes (MWCNT's) and Silicon oxide (SiO) as shown in Figure.1 and 2 were purchased from "Platonic Nanotech private limited," Jharkhand, India. Epoxy resin was purchased from the "Fine Finish Organics Pvt.Ltd" (ISO 9001- 2008 certified company) Taloja, Navi Mumbai, India. Pneumatic spray gun was purchased from "Burhani hardware", Dahanu road, Palghar dist., India. Mild steel was supplied from "Shubh M. L. Shah and Sons Steel Pvt. Ltd." Dahanu road, Mumbai, India. The technical specifications of

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Analysing Delays of Construction Projects in Western Part of Mumbai: Causes and Effects

Sandeep V. Gajjar, Soham Sawant, Ashish P. Kulkarni, Chaitali R. Kulkarni, Shivani G. Khabale, Usha N. Mane, Anand M. Hunashyal

Abstract: Construction is one of the most important employment sectors in India with very minimal research being done to identify the delay factors and causes that affect the construction Industry. The opinions of the construction professional required for the research was obtained by conducting interviews. A set of questions were circulated between the professionals working on the site to acquire the causes and effects of delays faced by them. To resolve the issues various studies and researches have been done by various researchers. The data analyzed in the research was done by using Relative Important Index (RII) which helpsto categories and rank the causes of delays according to the importance of the causes with respect to its contribution towards time delays, arbitration, litigation, cost overrun and total abandonment. Spearmen's rank correlation coefficient was used compare the effect of delays between contractors, owners and consultants. In this paper, the research is aimed towards finding the effects of various causes on the various parties on construction sites of coastal parts of Mumbai and methods of minimization of the same.

Keywords: Construction delays, Relative Important Index, Spearmen's rank correlation coefficient, ANOVA

I. INTRODUCTION

The completion of a scheduled project is a difficult task to accomplish in the unpredictable, complicated, multipartner and competitive construction environment[6]. In recent times, studies and researches which help torecognize the factors that contribute to delays in project completion work, cost overrun[13], and inefficient completion of construction as well as identifying the financial and planning obstacles are carried out. We may describe delay as an act or event that increases the time necessary for performing the tasks under a contract

This usually appears as additional working daysor as post period to initiate an operation[14,31] This is often seen as a common problem in construction work[12].

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According to Assaf et al (2006)[12]in construction industry, One can define delay as the 'Time Overrun' regarding two considerable conditions or situations. The first condition is delay beyond the date of completion la id down in the contract, second condition is delay beyond the date for which the involved parties agreed upon for delivery of a project. According to Kaliba C., M.M. (2009)[15], if project costs or schedules goes beyond their planned time period, client satisfaction would be trade off and the funding profile would failed to match the budget requirement and further slippage in schedule could results. Which further leads to costly disputes and shows many times adversely impact on relationships between the parties involved such as project stakeholders including owners, design professionals, construction professional, users and others.[8].In Saudi Arabia, Assaf and Al-Hejji2006[12] found that only 30% of construction projects are only projects which completed within the scheduled completion dates and along with it also found that average time overrun was between 10% and 30% regarding construction projects. Odeyinka and Yusif 1987 [2] have shows that seven out of ten projects surveyed in Nigeria goes through such delays in their execution of work. Ogunlana and Promkuntong 1996 [5] carried out a study on construction delay in Thailand. Al-Momani 2000[8], conducted a quantitative analysis on construction delays in Jordan and

Now considering Indian conditions and situations, construction is the second largest economic activity after agriculture, accounting for between 6 and 9% of India's GDP over the past five years, while reporting an annual growth of 8 to 10% .On this basis of above mentioned observations, finally we can conclude the main problems that the project face while dealing with these delaying factors usually runs around the time; cost is being overused for the improvement of the site work. The main aim and purpose of this study is to develop and create a recommendation based on a subjective analysis of data obtained from different parties via different methods. An analysis was based on a different standpoints or views of professionals within the construction industry based on the different affecting factors causing the overall delays in the construction project.

The parties included in contract by means of representation decide on the additional capital and extra time associated with construction delay for different parties is different. While it may be unrealistic to believe that all causes of delay can be brought under control [7]. The main task should be to define the parties responsible for the incident first.

Most of the time more than one party is responsible for th e project delays, so multiple delays can occur simultaneousl y.

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An Assessment to Replace Conventional Mild Steel with Hybrid Nanocomposite Steel to Improve Mechanical and Anticorrosive Properties

Sandeep.V.Gajjar, Chaitali.R.Kulkarni, Shivani.G.Khalsale, Usha.N.Mane, Anand. M. Hunashyal

Abstract: Multi Walled Carbon nanotube's (MWCNT's) are tiny tube's made of carbon atoms with a few nanometers in diameters and several microns in length. After Iijima's discovery in 1991, regarding the form of carbon atoms, a great deal of interest was drawn to utilize of MWCNTs outstanding chemical and physical properties such as high Young's tube, tensile strength, excellent thermal and electrical conductiveness. However, MWCNT's have been used in various fields, due to their chemical, thermal and mechanical properties. In the field of composite structures in which MWCNT's are not only included as a matrix as an insulator but also to obtain other chemical and physical properties like corrosion resistance, mechanical properties and electrical conductivity. Multi walled carbon nanotube's along with other nanoparticle's such as graphene oxide, zinc oxide, silicon oxide and cerium oxide nano particles which have been proven to have better mechanical and anticorrosion properties incorporated independently with MWCNT's to develop hybrid nanocomposite's offering a new composite material generation. Nanostructured composites enhance their sensitivity and efficiency when used in corrosive environment. In this research study an attempt is made to introduce new hybrid nanocomposite steels which can have higher mechanical and anticorrosive properties.

Keywords: MWCNT, Mild steel, Mechanical properties, Nanocomposites

I. INTRODUCTION

Due to the high resistance to corrosion and oxidation resistance properties mild steel is widely used as an engineering material. The internal microstructure and external environmental condition decides the mechanical properties of metallic materials [17-18]. Steel is used for various applications such as hammer, mills, ball bearings, drills, etc. By the addition of MWCNT's mechanical properties of mild steel have been increased [3-5]. Increasing carbon nanotube's content by 1-3% improving hardness and therefore density become less [5].

Commercially available 316L austenitic stainless steel powder was used to prepare samples consisting of Ni-12 % Mo-2.5 % Fe-16.8 % Mn-0.6 % Cr-12 % Si (wt. %).

The dispersion process of composites was multi-walled carbon nanotube's (MWCNT's) (firm: Nanocyl, Belgium) with a thickness of 5 nm and a length of several tens of micrometers. First, the DMQ-07 attritor (firm: Union Process) effectively milled the starting 316L powder in propanol for 10 h at 2800 rpm. In this unit, stainless steel rig by means of delta disk agitators was utilized. About 1mm diameter stainless steel grinding balls was used. The powder was milled in a dry environment for 1 hour at 600 rpm in the 01-HD / HDD M attritor after sifting in a 100 m mesh.3 and 5 wt after this milling process percent MWCNT's were mixed with the 316L powder and was further milled in the 01-HD / HDDM type attritor with a stainless steel tank, 1 mm diameter grinding medium and a delta disk agitator. High energy milling was carried out for 3 hours in ethanol solution at 4000 rpm to ensure effective dispersion of multi walled carbon nanotube's in industrial 316L powder. At the end, the milled powder was shifted to a mesh of 100 m. Reference sample 316L content was also developed without the addition of MWCNT's. This powder was also subjected to the same process of milling cycle as 316L powder and MWCNT's mixtures. The powders formed were sintered by SPS at a vacuum of 900 ± 10^{0} C for 5 min at a load of 50 MPa. The SPS method was carried out by a SPS-7.40 MR-VII system (firm: SPS Syntex Inc.) manufactured at Istanbul Technical University using a current of 20,000. After the consolidation process, disks having diameter of 50 mm and a thickness of 5 mm was made. Samples obtained from pure 316L are referred to as 316L, 316L-1CNT and 316L-3CNT, respectively, in mixtures of 316L and 1 and 3 wt. Percent of MWCNT [20].

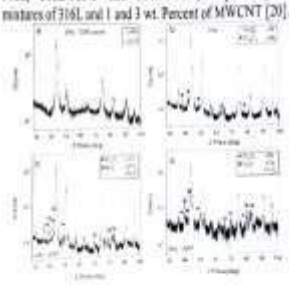

Fig.1 X-ray diffraction diagrams for (a) the original 316L-3CNT powder blend samples, (b) The sintered 316L powder samples, (c) 316L-1CNT samples and (d) 316L-3CNT samples [20]

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Mobile App for Rural Development and Governance of Village Centric System – MCDM Approach

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Abstract: Previous decade technological revolution in the field of computer investigation are utilizing android applications which are programming application which make the issues simple to settle us well as are easy to use subsequently popular because of its open source nature. This application is for those clients who are associated with Geographic Information Systems (GIS) where the reason for the present examination is to show applications that improve the GIS involvement with our cell phone. For complex arrangements in deciding basic and touchy information engineering organizations in the field of innovation utilizes Decision Analysis Module Excel (DAME) which are modified based worksheets. Target of this examination is to improve to current existing strategies for figuring loads of different other options and to make it mistake free and less tedious. It additionally lessens the assets required via computerizing the process. An application subject to android stage has been discussed to commit this work less dreadful to errors and extraordinarily capable.

Keywords: multi criteria decision making, ranking, rating, DS

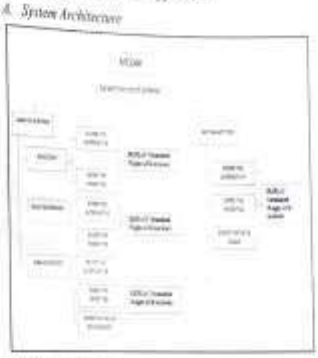
I. Introduction

This examination intends to make an Android application fit for assisting with ascertaining the loads and needs relying upon the client. Multiple-criteria decision-making (MCDM) is a strategy that joins the introduction of decision choices over a couple, refuting, abstract and also quantitative criteria and results in an exchange off game plan. Pertinent techniques are every now and again material, certainly or extremely, in various genuine issues and can be experienced in various exercises where sets of choice options are assessed against clashing criteria. Multi-Criteria Decision Analysis (MCDA) is a general framework for supporting complex essential initiative conditions with various and normally conflicting focuses on that accomplices get-togethers and moreover boss' regard in a startling manner. MCDA is a "conventional term to depict an aggregation of formal philosophies which hope to survey various criteria in helping individuals or social affair research decisions that matter" It is essential to handle such issue which incorporates different criteria like receptiveness, great ways from road and business focus, landform, LULC (Land Use land Cover) etc. Multi-Criteria dynamic strategies like positioning and rating technique are reasonable to take care of such issues.

II. Ease of Use

This literature survey presents a Microsoft Excel include called DAME – Decision Analysis Module for Excel. Standing out from other PC programs DAME is free, can work with circumstances in various processes and features moderate calculations. Customers can structure their decision models into three levels: circumstances/customers, criteria and varieties. Things on all levels can be surveyed either by burdens or pair-wise assessments. – Satpal's Method, Geometric Mean Method and Fuller's Triangle Method. Multiplicative and added substance blends are upheld keeping up the Integrity of the Specifications. As indicated by writing audit are exhibited so as to reveal, order, and decipher the cbb and flow explore on PROMETHEE strategies and applications

A. System Architecture



B. Problem Statement

Rural development is a strategy designed to improve the economic and social life of rural villagers. It is the process of improving the social, economic, and cultural conditions of a village or small town.

We can tackle this with the help of MCDM approach. Multi-Criteria Decision Making (MCDM) deals with decisions involving the choice of a best alternative

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ASSESSMENT OF URBAN UTILITIES FOR MUMBAI CITY USING 3D MODELING TECHNIQUES

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ABSTRACT

In the early days, humans used to live in semi-permanent villages. They shift as soon as their land becomes less fertile. With the up-gradation in technology and the rise in the standard of living, people prefer settling in urban locations than living in rural areas. This urbanization leads to challenge in today's planning and development departments. The growth of the world population and migration of people are creating congestion in cities. The cities are now more crowded, dense with persistent traffic problems and a rise in pollution levels. There needs planning for adequate food, sanitation and education for all, and thereby making it necessary to plan for sustainability. Instead of separate residences, they will be constructed vertically. They may possess everything people need in their daily life. The future will see vertical farms and skyscrapers for food production and renewable sources for energy production. The generation of the 3D city model will help in planning and analysis of the city. This helps in the development of small self-sustainable cities mainly focusing on local and sustainable production. We have worked on the Nariman Point, Mumbai in this paper. We have studied the buildings, congestion and land usage of this region and analyzed the current scenario of the region. The 3D modeling of the city will help the city and town planners to optimize the city.

Keywords: 3D Modeling, Town planning, Urbanization, City planning, Mumbai, India.

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Estimation of Rate and Time Delay for underground Mumbai Metro Corridor by using Monte Carlo Simulation

Abhishek Lowe, Karthik Nagarajan, Raju Narwade

Abstract: Globally the utilization of metros is incredibly common in transportation for convey individuals at one place to a different convey individuals at one place to a different with ease. Infrastructure of Asian nation project ill-framed for time delay and rate value flooded. Globally there many analysis for estimating cost and time delay with analytical, case study and downside that are the causes inflicting time delay and rate value flooded which we found by using Kenkin's constant techniques, Risk performance technique, Time delay and cost overrun index, CPM & PERTS, Monte's Carlo Simulation Techniques. Budget dominant and change and Milestone charts are such type of methodologies applies to seek out project's time delay and cost overrun in Infrastructure project. This paper the methodology accustomed ascertain expected time and cost in Mumbai underground metro rail passageway (MUMRP) by victimisation application of Monte's Carlo Simulation Techniques (MCST) during this we have a tendency to use network flow chart by locating out trial and error based mostly to create activities as potential path technique (EPT) by given downside statement and also outcome in terms of results and conclusion.

Keywords: EPM, Metro Corridor, Monte's Carlo Simulation Techniques (MCST), PERT, Time Delay

I. INTRODUCTION

Risk Management is a vital and primary a component of project management in foremost manufacture comes. on behalf of associate communications task, risk management are often administrate effectively by work and distinctive the source of risks related to every action of the project. These risk are often assess or calculated within conditions of likelihood and collision for the reason that for delay and cost value overrun as comes.

Globally the metros is extremely common for transportation for convey individuals at one to a different with ease. In Asian nation the cities wherever population over 1-10 million and because of that the hold up the road accident is a lot of common in that cities the role of tube rail is extremely necessary to scale back such drawback incidence in future. Infrastructure of Asian nation project ill framed for time hindrance and rate value flooded. A construction project is often admitted as in once it complete on time with budget, according the specifications, and neutral satisfaction.

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Several of them mentioned concerning time delay and asking price flooded and their factors meant for inflicting occasion delay and rate flooded in project.

The key actions in underground metro corridor structure consist of viability study , plan passage change ,review works ,boat stud and king post piling works ,lumber covering works ,top soil, rock and muck excavation ,structure decking ,toughen struts ,rocks anchor , slabs drainage , wet and spray waterproofing ,eternal structure works ,mechanical and electrical installations ,sand backfilling and reinstallation works

The feasibility stage of the project is a supplementary five year. The resultant system diagram is given in Figure 1 a few supplementary projects information be furnish in Appendix 1.

II. LITERATURE REVIEW

Arya Vijayan et al. (2019) used IoT based architecture for monitoring water leakage which can be referred for metro tunnel construction where roof leakage is an major issue , **Biradar Shilpa et al. (2019)** has found an alternative partial replacement for coarse aggregate by using E waste concrete by which time delay can be reduced in material management. **Chowdary Mohanlal et al. (2019)** has applied 4D GIS technique for labour management in Uran area in Maharashtra which time delay can be reduced in material management. **Chowdary Mohanlal et al. (2019)** has applied 4D GIS technique for labour management in Uran area in Maharashtr which can be implemented for major infrastructural construction industry. **Chhaya Zende et al. (2019)** has found a reusable formwork manufacturing technique which can be used for future cities metro line developments etc.. **Mahesh S. Singh et al. (2019)** has research in labour productivity by using R II method whereas **Sanika Kandalekar et al. (2019)** has worked on feasibility of pervious concrete pavements. **Pradnya Patil et al. (2019)** has emphasised on how to apply PVA fibres using NDT test and Pallavi Patil et al. (2019) has developed a method termed as re modified minimum moment method for resource management for infrastructural projects. **Shobhana Jadhav et al. (2019)** has used GIS to find the shortest possible route for material transport management which is a major part for metro management across big cities. **Pravin Shahi et al. (2018)** revealed that the deployment of well skilled manpower at site can help to save significant amount of repairing and rehabilitation budget as well as reduction of project duration period without impeding any quality parameter.

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"Soil Erosion Modelling using RUSLE and GIS of Dehrang Dam Watershed, Panvel, District Raigad, Maharashtra"

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Abstract

The significant danger to land and water assets are soil disintegration.The prime basis of water supply in Panvel, Raigad is Dehrang dam. The dam is locatedamid 18°59'24" N to 19°3'59" N latitudes and 73°14'14"" E to 73°17'14"" E longitudes of vicinity25.51 sq km. Revised Universal Soil Equation Model (RUSLE) and Geographical Information System (GIS) are used to find the annual soil erosion rate in Dehrang dam watershed. Changes inLand-use/land-cover (LULC) such as heavy runoff and their possible impacts on earthwearing down are two severe problems of watershed development. In this studysatellites images of land sat 5 and land sat 8 images have been used.The investigation shows that for the learning period 1990-2019, minimum and maximum values of (a) yearly computed average rainfall are 2,181.61 mm and 2,277.66 mm. All five parameters such as observed rainfall, digital elevation model (DEM), Soil data,and Land management data and satellite images used in RUSLE model. Because of soil erosion the agricultural development, water quality, environment health in territory and marine environments, and artisticimportance of landscapes has negative impact on the surrounding vicinity.The average computed annual soil loss of Dehrang dam watershed area is 2.81 ton /ha/year. This is groundwork and provides wearing away risk situation in the watershed. The study can be used more for strategic planning of land use management, soil and water maintenance in the watershed.

Keywords:RUSLE, GIS, Soil Loss, Soil Erosion, Dehrang Dam Watershed

1. Introduction

Soil erosion is the foremost root and essential element of soil dreadful conditions (Guohua Fang et al. 2019). Water is a meaningful part of each and every individual living on this earth (Panaskar S et al. 2019) . All life forms require water and due to increasing population there is a competition for water among humans as well as between humans and other life forms(Kumar V et al. 2019). Water scarcity is most common problem in many countries throughout the world and so in India (Mestry A et al. 2019). Soil erosion involves the process of detachment of soil, transportation of soil and then leading to the deposition of soil. It occurs due to natural process.The loss caused by soil erosion linked to the sustainability of flora and fauna and the long-term quality of the soil in useful landscapes due to the decrease in soil depth and dam maintenance capability (Fayaset al. 2019). Afastgrowinginhabitants and differentindividualfinancialactionsspeed up soil erosion and have led to moreinterference into normal ecosystems (Wang et al., 2018).One sixth of the worlds area has been effected by streamwearing away (Walling et al. 2003).

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Secure image steganography using framelet transform and bidiagonal SVD

Mansi S. Subhedar[1] · **Vijay H. Mankar**[2]

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Abstract
Steganography and steganalysis are the prominent research fields in information hiding paradigm. This work presents a novel framelet transform based image steganography scheme that hides a secret image into cover image. Perfect reconstruction, sparsity, and stability enables framelet transform to be considered as suitable decomposition technique to obtain transform coefficients. The scheme also benefits from bidiagonal singular value decomposition. Secret information is embedded in singular values of framelet coefficients and stego is obtained. A variety of experiments is conducted to judge the efficacy of proposed method. Simulation results prove that stego images possess better visual quality and are robust to several popular image processing operations. Security performance of proposed method is investigated using various steganalysis schemes that include Gabor filter based, wavelet based and contourlet based steganalysis. Detection accuracy is found to be poor in all cases and confirms the undetectability.

Keywords Image steganography · Bidiagonal singular value decomposition · Framelet transform · Wavelet and contourlet based steganalysis

1 Introduction

The concept of 'What You See Is What You Get (WYSIWYG)' no longer holds true. Images can be more than what we see with Human Visual System (HVS); hence, they can convey more than merely thousand words. Nowadays, thanks to the stunningly fast advancement of computer and network technology, people can easily send or receive secret information in various forms to or from almost any remotest part of the world through the Internet within seconds. In fact, there might be tons of secret information being transmitted and exchanged on the Internet at this particular point of time. Owing to the rapid growth of multimedia

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Image steganography using contourlet transform and matrix decomposition techniques

Mansi S. Subhedar[1] · **Vijay H. Mankar**[2]

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Published online: 12 April 2019

Abstract
This paper presents the transform domain image steganography schemes using three popular matrix factorization techniques and contourlet transform. It is known that security of image steganography is mainly evaluated using undetectability of stego image when steganalyzer examines it in order to detect the presence of hidden secret information. Good imperceptibility only suggests eavesdropper's inability to suspect about the hidden information; however stego image may be analyzed by applying certain statistical checks when it is being transmitted through the channel. This work focusses on improving undetectability by employing matrix decomposition techniques along with transform domain image steganography. Singular value decomposition (SVD), QR factorization, Nonnegative matrix factorization (NMF) are employed to decompose contourlet coefficients of cover image and secret is embedded into its matrix factorized coefficients. The variety of investigations include the effect of matrix decomposition techniques on major attributes of image steganography like imperceptibility, robustness to a variety of image processing operations, and universal steganalysis performance. Better imperceptibility, large capacity, and poor detection accuracy compared to existing work validate the efficacy of the proposed image steganography algorithm. Comparative analysis amongst three matrix factorization methods is also presented and analyzed.

Keywords Image steganography · Contourlet transform · Singular value decomposition · QR factorisation · Non-negative matrix factorisation · Universal steganalysis

1 Introduction

With the rapid growth of multimedia technology, computer networks are subjected to malicious attacks. Privacy and security of information is the most promising issue in our digital life. One of the traditional ways to secure information while it is being transmitted through the channel includes its encryption. However, encrypted messages are obvious and reveal

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Non Invasive E-Health Care Monitoring System using IOT

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Assistant Professors of Pillai HOCL College of Engineering & Technology, Rasayani

***Abstract*- The E-health monitoring system is one amongst the main developments within the field of life science. An automatic wireless health monitoring system is employed to live patient's temperature, pressure, pulse etc. which are accustomed evaluate the health condition of the patient. Providing the collected information to the doctor and making proper decision on the information collected also notifying the patient is that the challenging task within the IOT. During this project, an IoT based E-health care monitoring system is proposed which is Non-Invasive in nature . As the population ages, there is a greater need to develop clinical and personal diagnostic tools. As wait times for medical attention increases, the automation of non-invasively collecting patient vitals could significantly improve the efficiency of modern health care. The system components are presented and their accuracy is discussed, along with suggested enhancements.**

***Index terms*- Non-invasive, Health monitoring, E-HealthCare, Pulse rate senor, Temperature Sensor, Heartbeat Sensor, Arduino**

I.INTRODUCTION

Health monitoring is the major problem in today's world. Due to lack of proper health monitoring, patient suffer from serious health issues.[1] Health Monitoring is becoming critical and in-affordable. More than 50 percent death occurs in patients who are not continuously monitored. Heart attack, high blood pressure, high blood glucose are parameters affecting the health of people. There are lots of devices available now days to monitor the health of patient over internet. But the treatment is impaired, because the diagnosis is Invasive and Non-Continuous.

A. What is health monitoring system?

The patient health monitoring system is one of the major developments in the medical area. An automatic wireless health monitoring system is used to measure patient's body temperature and heartbeat by using embedded technology. The sensors used in the system helps to monitor the condition of the patient.

B. What is Non-Invasive Patient Health Monitoring System?

Non-Invasive Patient Health Monitoring System does not involve the introduction of instruments into the body. They are increasingly helping people to better monitor their health status both at an activity/fitness level for self-health tracking and at a medical level providing more data to clinicians with a potential for earlier diagnostic and guidance of treatment.

C. Why Non-Invasive?

Everyone has had an experience, most of them unpleasant, involving sharp objects and blood. The main advantage of non-invasive methods is the relief from pain and discomfort due to frequent finger pricks.

II RELATED WORK

Modern health care system introduces new technologies like wearable devices or cloud of things. It provides flexibility in terms of recording patients monitored data and send it remotely via IOT. For this connection, there is need of secure data transmission .To transmit the data with privacy is the Moto of this paper. The proposed system introduces security of health care and cloud of things .System works in two major parts viz. storage stage and data retrieving stage. In storage stage, data is stored, updated for future use. In data retrieving stage, retrieve data from cloud.

The cloud server can share with authenticated user as per request. A patient with wearable devices continually updates his record every 5 or 10 min. In emergency mode, it updates for every 1min.The

Water Supply Monitoring & Controlling System with Water Theft Identification

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Abstract- ***According to recent study, water has become an enormous issue thanks to less rain fall, upsurge in residents. Several cities face this downside. Individuals suffer from this downside for not having decent quantity of water for daily requirements. Because of lack of surveillance, water can't be provided properly. Other difficulties are unnecessary consumption, overflow of tanks, leak in pipeline, constant water supply. High pressure of water flow will increase the likelihood of pipeline cracking. All these problems are due to lack of investigation & less workforce. Here the approach we have opted for this in-hand crisis, is using the NodeMCU 1.0 (ESP12E Module) microcontroller generally known as ESP8266 Wi-Fi Module and a 16x2 LCD Screen which will of-course play its role when the wireless transmission is out of commission. Other key components in this system are LM324AN IC and a Generic Pressure Transducer. The job of Pressure Transducer is very much clear by its name, it's simply measuring the pressure of a flowing water and convert the mechanical parameter into the voltage parameter. The more the pressure is, more will be its voltage value. LM324AN IC is actually a Quad Op-Amp. Here we have used this IC as a Comparator.***

Indexed Terms- ***16x2 LCD Screen, LM324AN IC, NodeMCU 1.0 (ESP12E Module), Pressure Transducer.***

I. INTRODUCTION

As the population and economic process will increase the demand for water supply also will increase in day to day life. It's terribly troublesome for the enterprises to continuous monitor-and-manage the water leakage-and-stealing of water by the customers. Therefore, so as to beat this downside the urban provide water system networks to establish the connection between water supply and intake water consumers. Hospitals and factories would like continuous provide of water in massive scale, therefore urban facility systems and public enterprises are sometimes a part of regime, take care of the continual observance and maintaining of the facility.

In order to implement the proposed water supply system, the personnel are provided with a feature of SMS from a microcontroller equipped with Wi-Fi Module to transmit the information to remote monitoring station using wireless transmitter.

Here the approach we have opted for this in-hand crisis, is using the NodeMCU 1.0 (ESP12E Module) micro-controller generally known as ESP8266 Wi-Fi Module and a 16x2 LCD Screen which will of-course play its role when the wireless transmission is out of commission. Other key components in this system are LM324AN IC and a Generic Pressure Transducer. The job of Pressure Transducer is very much clear by its name, it's simply measuring the pressure of a flowing water and convert the mechanical parameter into the voltage parameter. It does so, with the help of diaphragm inside it. The more the pressure is, more will be its voltage value. LM324AN IC is actually a Quad Op-Amp. Here we have used this IC as a Comparator. In the demo version we used three Pressure Transducer, and hence the number of sectors we are showing would also be three. Not to mention, other reason would be the availability of even a Generic version of Pressure Transducer is rare. Hence the three Op-Amps in the LM324AN IC will be used as a Comparator. The LM324AN IC requires two inputs for the comparison to take place. One input is a fixed value which is provided through potentiometer (so that the values can be determined as required) and another will be obviously from a pressure transducer.

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Experimental Based Learning and Modeling of Computer Networks

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ABSTRACT

Computer network experts are in great demand these days. This study aims to examine the effectiveness of using Cisco Packet Tracer as a simulation tool. This development reflected significant importance for higher education institutions. It ensures that all students have ample networking assistances. The computer network needs consideration of theory and practice. Hence, Cisco packet tracer software is recommended to solve this difficulty. In this paper, design and simulation of a computer network with Cisco network packet tracer simulation software is illustrated. This software would normally not work deprived of a variety of configurations. So, essential steps and configurations of software are explained in this paper which is useful in network design. Extensive simulation results validate this model.

KEYWORDS: *Cisco packet tracer, simulation of LAN networks, protocol data units, protocol stack*

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1. INTRODUCTION

Cisco is an organization that makes high-quality network devices. Therefore, the Cisco network is a very advance level of network connection based on innovative configurations that run on certain computers that use different OSI models. International organization for standardization (ISO) formed open system interconnection model [1]. The goal is to support providers to be able to exchange and make use of information network designs and simulation software in the method of procedures so that diverse provider networks can work together. This will become the challenge for all research community to follow a standard design and configurations.

The computer network is an essential topic in multiple engineering streams such as Software engineering, Computer Science, Electrical Engineering, Information technology and other programs. The Computer Networks area needs experts with a concrete network idea and hands-on knowledge. Besides the rapid scientific innovation in the field of computer connections and Information Technology engineering, the requirement for a considerable quantity of professionals in qualified networks also increased.

Therefore, simulation software is recommended to give a student of a network topic which gives knowledge involvement, and students can get the actual network background into the classroom to make it more collaborating and operational.

The software is very beneficial and inexpensive for the institutions. Cabling and physical connectivity cannot be studied by simulation software. Cisco Packet Tracer like tools developed by various corporations which also include a vast list of GNS3 and Boson NetSim and [3]. Presently in academics world Cisco Packet Tracer which is developed by Cisco extensively uses. The following figure shows the graphical user interface of the Cisco packet tracer software.

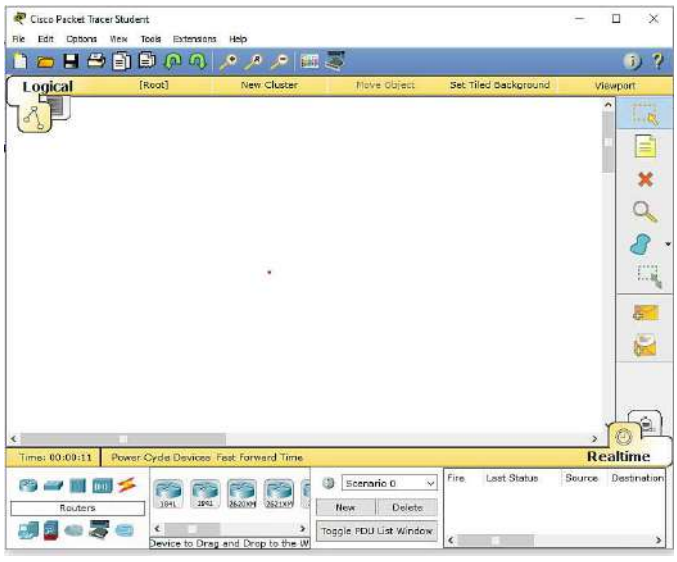

Figure 1 Interface of Packet Tracer Simulation Software

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Real-time tracking of water tanker using GPS, GSM, and Arduino

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ABSTRACT

Vehicle tracking system is a well-established technology in this era which is used by fleet system and owner of vehicle all over the world. It is a very safe and reliable technology. In this paper a real time tracking system is proposed. It is going to design a system which is used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global System for Mobile Communication (GSM). The design is an embedded application, which will continuously monitor a moving vehicle and report the status of vehicle on demand. Tracking device used in real time vehicle location tracking is made up with Arduino Mega, SIM800A module and GPS module. For doing so the Arduino Mega is interfaced serially to a GSM module and GPS module. The GSM module is used to continuously send the position of the vehicle from remote place. The GPS module that uses satellite technology for its navigation system will continuously give data like longitude, latitude, time, direction of travel etc. Google map is used to view the position of vehicle on a digital mapping. This proposal has significant application for vehicle security, salesman tracking and private drivers.

Keywords— *Vehicle Tracking, Water Level Indicator*

1. INTRODUCTION

With advancements in technology, there has been an increase in the usage of vehicle tracking systems. The design of vehicle tracking systems enable the display of a vehicle's position on Google Maps. The GPS, GSM modules controlled by Arduino MEGA are placed inside the vehicle. In this way, the vehicle position is updated every 40 seconds as the vehicle is moving. Vehicle tracking systems are very useful nowadays. This system enables the owner to observe and track the vehicle and find out about vehicle movement and past activities of automobile. This technology popularly called real time Vehicle Tracking Systems has proved useful in ensuring the security of vehicles. This hardware is fitted onto the vehicle in such a manner that persons who are in or outside of the vehicle cannot see it. Thus, it is used as a covert unit which continuously, or as a result of interruptions to the system, sends location data to the monitoring unit. When a vehicle is stolen, the location data from the tracking system can be used to find the location and so inform the police for further action. When users make a request, the GPS coordinates of the vehicle are sent to a specified mobile. The user will be provided with the position of the vehicle in terms of latitude, longitude, time along with the direction of travel which can be viewed using Google Maps. This service is typically provided at a low cost. This information is available to authorized users of the system via internet websites that will be designed by us.

Different users can access the website and track the respective tanker t know its location.

2. RELATED WORK

The hardware and software of the GPS and GSM network have already been developed. The proposed GPS/GSM based System has two parts. The first is a mobile unit and the second is a controlling station. All system processes including the various interfaces for transmission of data have worked successfully. These results are compatible with current GPS technologies. A Vehicle Tracking System is a device that is fitted in a vehicle, to enable the vehicle owner to identify the vehicle's location. This paper proposes the design of a vehicle tracking system that utilizes GPS and GSM technology. This system built based on an embedded system, can be used for tracking and any car through GPS - Global Positioning System and GSM - Global System for Mobile Communication. This design will continuously monitor the location of a moving vehicle and report the status of the vehicle on demand.

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Real-time tracking of water tanker using GPS, GSM, and Arduino

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ABSTRACT

Vehicle tracking system is a well-established technology in this era which is used by fleet system and owner of vehicle all over the world. It is a very safe and reliable technology. In this paper a real time tracking system is proposed. It is going to design a system which is used for tracking and positioning of any vehicle by using Global Positioning System (GPS) and Global System for Mobile Communication (GSM). The design is an embedded application, which will continuously monitor a moving vehicle and report the status of vehicle on demand. Tracking device used in real time vehicle location tracking is made up with Arduino Mega, SIM800A module and GPS module. For doing so the Arduino Mega is interfaced serially to a GSM module and GPS module. The GSM module is used to continuously send the position of the vehicle from remote place. The GPS module that uses satellite technology for its navigation system will continuously give data like longitude, latitude, time, direction of travel etc. Google map is used to view the position of vehicle on a digital mapping. This proposal has significant application for vehicle security, salesman tracking and private drivers.

Keywords— *Vehicle Tracking, Water Level Indicator*

1. INTRODUCTION

With advancements in technology, there has been an increase in the usage of vehicle tracking systems. The design of vehicle tracking systems enable the display of a vehicle's position on Google Maps. The GPS, GSM modules controlled by Arduino MEGA are placed inside the vehicle. In this way, the vehicle position is updated every 40 seconds as the vehicle is moving. Vehicle tracking systems are very useful nowadays. This system enables the owner to observe and track the vehicle and find out about vehicle movement and past activities of automobile. This technology popularly called real time Vehicle Tracking Systems has proved useful in ensuring the security of vehicles. This hardware is fitted onto the vehicle in such a manner that persons who are in or outside of the vehicle cannot see it. Thus, it is used as a covert unit which continuously, or as a result of interruptions to the system, sends location data to the monitoring unit. When a vehicle is stolen, the location data from the tracking system can be used to find the location and so inform the police for further action. When users make a request, the GPS coordinates of the vehicle are sent to a specified mobile. The user will be provided with the position of the vehicle in terms of latitude, longitude, time along with the direction of travel which can be viewed using Google Maps. This service is typically provided at a low cost. This information is available to authorized users of the system via internet websites that will be designed by us.

Different users can access the website and track the respective tanker t know its location.

2. RELATED WORK

The hardware and software of the GPS and GSM network have already been developed. The proposed GPS/GSM based System has two parts. The first is a mobile unit and the second is a controlling station. All system processes including the various interfaces for transmission of data have worked successfully. These results are compatible with current GPS technologies. A Vehicle Tracking System is a device that is fitted in a vehicle, to enable the vehicle owner to identify the vehicle's location. This paper proposes the design of a vehicle tracking system that utilizes GPS and GSM technology. This system built based on an embedded system, can be used for tracking and any car through GPS - Global Positioning System and GSM - Global System for Mobile Communication. This design will continuously monitor the location of a moving vehicle and report the status of the vehicle on demand.

IOT Based Early Flood Detection and Avoidance

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Abstract- ***Flooding is a natural phenomenon which has attracted global attention as a result of its negative impact on the society. Developing nations such as India have been predicted to experience increased flood occurrences in the coming decade. The events of flooding are unlikely to change, however, its impact on our society can be very well reduced. There are some places that are more prone to flooding than other places, the implementation of flood alert systems near any major water area or body of water provides critical information that can protect property and save lives.***

Hence we are designing this project to inform the people about the upcoming flood by making use of the concept of Internet of Things. For that purpose we are going to use an android Application to intimate the users. This Project focuses on providing early detection of flooding and the measures to minimise and avoid floods. The system involves the deployment of sensor nodes at specific flood vulnerable locations for real-time flood monitoring and detection. Flood events relating to flash flooding and run-off water or overflow are successfully monitored in real time which saves individuals plenty of time to prepare against predicted flood occurrence, saving them from the aftermath of flood disaster.

Indexed Terms- Arduino, Android, BLYNK IOT, ESP8266 Wifi Module, Moisture Sensor, Ultrasonic Sensor

I. INTRODUCTION

In India, the rainy seasons occur each year from June to October. Early rainfall is usually in June with full commencement in July, and stops in the months of October each year, with a few showers in November. Flooding is a natural phenomenon which attracts global interest. It results in tremendous environmental destruction and loss of lives. Flooding is a result of substantial rainfalls, structural failures and a large number of human factors. Floods rely on precipitation amounts and rates, topology, geology, land use, and antecedent moisture condition.

In the year 2018 Severe flooding affected Indian state of Kerala due to unusual high rain during monsoon season. It was the worst flooding in Kerala in nearly a century. In which over 374 people died within fortnight. Thirty-five out of 42 dams within the state open for the first time in history. Kerala received heavy monsoon rainfall on the mid evening of August and resulting in dams filling to capacity in the first 24 hours of rainfall the state received 310 mm of rain.

The events of flooding is unlikely to change, however, its impact on our society can be very well reduced. Efficient forecasting and early warning systems can help mitigate the effects of flooding. The concept of Internet of things can be used to collect Real time information from a wide range of environmental phenomenon.

To develop A Real Time Solution to Flood detection and avoidance Using IoT and Sensor Network, we proposed a flood detection and avoidance model which requires attention to three basic factors: Data collection via water level sensors, data processing, and the dissemination of flood warning information. While automated flood warning systems are often surprisingly expensive to implement, the primary factor determining cost for any such system is the number of Sensor site locations.

To tackle the problem of detection of the flooding, we are using the Y89 Moisture sensor's which will act as the water level sensor. Where the resistance value will be proportionate to the moisture in the soil.

The HC SR04 Ultrasonic sensor will be used to monitor the water level in a body which stores water which can easily be water dams in our case.

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ACCIDENT IDENTIFICATION & ALERTING SYSTEM

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ABSTRACT

As nowadays, the number of vehicles are increasing rapidly, the number of accident happening due to vehicles are also get increased. Most of the accident happened because of increased traffic as well as high speed, drunk & driving, overstress, diverting minds and due to use of electronic gadgets. The proposed system ensures by making emergency facilities available to the accident victim as early as possible by giving emergency message to relatives, hospitals or rescue teams letting know the accident location with the help of system embedded in the vehicle. This paper discuss about a system which can automatically detect an accident happened and can alert the hospitals, ambulance, family members, police station or rescue teams which are nearest one. The system uses the Accelerometer to detect an accident. The microcontroller continuously monitors the output of accelerometer. The accident location of the vehicle can be tracked by using GPS module which is installed in the system. Once accident occurs, the accident location is sent through the GSM modem used in the system.

Keywords: Accident, Emergency, Microcontroller, MEMS, Accelerometer, Gyroscope, GPS, GSM

I. INTRODUCTION

In today's era, vehicles are the important part of the human's daily life. The usage of vehicles have increased rapidly over the past decades. The major reason for the death rates over the world is due to the road accidents. The appearance of vehicles impacts on the human life. The increasing number of vehicles has also increased not only the road accidents but also traffic hazards. Preventing deaths and serious injuries in road accidents is becoming an important goal for the governments around the world. The main reasons for the accidents are high speed driving, lack of sufficient sleep, drunk and driving and also the use of electronic gadgets while driving. To recognize the location of the accident and to find the accident location automatic accident identification and alerting system is very useful. For an accident victim, every second is important to save the victim's life. Hence, it is important to provide medical services on a time to the victim of the accident. In the arrival of ambulance if there is delay, there will a probably loss of life. Near about 1.2 million people are died every year and 50 million people injured every year worldwide due to road accidents.

The most likely reason of individual's death after accident is lack of first aid because emergency services cannot reach on time at accident location. Analysis shows that if we decrease only 1-2 minutes of accident response time that can increase the chances of saving person's life upto six percent. Hence, emergency services should reach on time at accident location. Therefore, the main goal of the accident identification system is to detect an accident and automatically send the message to the registered numbers such as emergency services along with the location. Real time geographic location of the vehicle is informed by the system by using preinstalled sensing accelerometer equipment. The output of an accelerometer is given input to the microcontroller, this input data is continuously monitored by the microcontroller unit. The vehicle can be tracked in all weather conditions. GPS and GSM technologies are used in the proposed system to provide all the data to the registered number or the remote server. The information received is used to provide services to the individual at the time of emergency.

The output of the accelerometer is continuously monitored and processed by the microcontroller. When an accident occurs, there is a sudden change in the acceleration or the roll-off in the car's axis. The accident is detected with the help of the microcontroller. The microcontroller sends an alert message automatically to the relatives as well as nearby police station and emergency medical services through the GSM module. The geographic location of the vehicle is acquired by the GPS module. The alert message includes the geographic coordinates, time in which accident has occurred. Incase if there is false detection of accident or a minor accident happened and there is no medical facility required a switch is provided to the user to terminate the ongoing emergency message. The switch has to be pressed by the user within specified time which is 1 or 2 minutes. Hence with help of this project we can detect the location of the vehicle where the accident has occurred so that we can provide the first aid to the victim as early as possible.

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MICROSTRIP FILTER DESIGN FOR WIRELESS COMMUNICATION APPLICATION

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ABSTRACT

The subject of microwave filters is quite extensive due to the importance of these components in practical systems and the wide variety of possible implementation. Here we have implemented microwave filters using microstrip transmission line, such as low-pass filter and dual-band filter. Microstrip line is one of the most popular type of planar transmission lines and is easily miniaturized and integrated with both passive and active microwave devices. Microstrip transmission lines are getting popular due to their compact size, light weight, low cost and ease of fabrication. The fabrication of filters is done using Flame retardant -4 (FR-4) substrate having relative permittivity of 4.4. For simulation purpose of microstrip filters ANSYS High frequency structural simulator (HFSS) software is used .We have used spectrum analyzer and scalar network analyzer (SNA) for verifying the frequency response of filters

KEYWORDS: Filters, FR-4, HFSS, Microstrip, Insertion loss, VNA , Spectrum Analyzer.

I. INTRODUCTION

The development of multi-service mobile wireless communication system like GSM, CDMA, Bluetooth, Wi Max, GPS, WLAN and the combination of one or more services together, has created the necessity to design the dual and Multi band filter Dual-band BPFs have been gaining a wide attention in recent years. The new advancements in satellite communication, wireless power transmission (WPT) and power harvesting having filters as their essential part have increased research and development of the same. Proper usage of filters in communication system will enhance the performance of system and improves efficiency.[1]

Microwave filters are one of the most important parts of the cellular mobile and satellite systems and in this kind of circuits, compactness and high performance are of primary importance. Of course, some other parameters such as low cost, light weight and low loss have also important role in enhancing the system performance. In the mean time, simplicity of the designing and fabricating of the filter structure is one of the other parameters that can be of an advantage for a filter design.[1] Using the microstrip line as the transmission line in this filter design can make design calculation easy. By choosing the closed-loop resonator in octagonal form the curvature effects is decreased, compare with that in similar filter structures designed in square loop shape. The substrate material used has good characteristics that can support the mentioned demands such as low loss, light weight and low cost.[2] Loss tangent is very important parameters to be considered as dielectric loss quantifies dielectric materials dissipation of electromagnetic energy which should be as minimum as possible Its high dielectric constant also helps to have more compact size. Of course by using better materials with lower loss tangent, lower insertion loss in passband can be achieve.

II. METHODOLOGY

Above 900 MHz frequency, distributed nature of lumped elements prevents the proper operation of filters. In this project for given specification, filters are designed to achieve an exact center frequency, good bandwidth and low return loss level. Two major problems associated in microwave filter design are, first is within the limited frequency range only lumped elements work properly and second is distance between components at microwave frequency is not negligible. First problem is solved by Richard's transforms which converts lumped elements into transmission line section. For second problem Kuroda's identities can be used to separate filter elements by using transmission elements.[3][4]

Microgrid Control and Protection

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***Abstract*- Microgrids are Small- scale version of traditional large power grids functioning either autonomously or with inter connection to the main grid. Microgrid provides efficient, low cost, clean energy and improve the stability of the regional electric supply it also has no transmission system. Primary function of micro grid is to serve power at distribution level. DERs connected to the micro grid enable reliable and efficient operation of micro grid. This paper addresses operation of microgrid voltage control and protection. The main aim of this paper is three- fold. First, a control strategy for inverter based solar panel is purpose to control voltage during islanded operation. Secondly, a protection scheme is proposed to protect both the lines and solar panel during islanded operation. Lastly, both the control scheme and protection scheme and coordinate and synchronized with each other to avoid malfunction.**

***Index terms*- Microgrid, Distributed energy resources, Transmission System, Islanded Operation, Solar Panel, and Voltage Control**

I.INTRODUCTION

A microgrid refers to distributed energy resources and loads that can be operated in a controlled, coordinated way; they can be connected to the main power grid or operate in "islanded" mode during fault condition. Microgrids are low-voltage or medium-voltage grids located at or near the consumption sites. They can generate power from both renewable and conventional sources and although they are mainly electrical systems, they can also incorporate a thermal energy component, such as combined heat and power. Microgrids are increasingly being implemented with energy storage systems, as batteries become more cost competitive. The system is controlled through a microgrid controller comprising demand-response so that demand can be matched to available supply in the safest and most optimized manner. A flywheel or battery-based grid stabilizing system can be incorporated to offer real and reactive power support.

Allowing the solar panel to operate during an islanding situation could potentially bring benefits to the owner, DNO and the customer. The owner benefits from the additional revenue since it is selling power during utility outage. As for the DNO, an improvement in the overall security of the supply could be achieved. Lastly, the customers are satisfied due to the reduction in the frequency and duration of interruptions resulting from outages in the distribution network. Solar panel should be equipped with an islanding detection algorithm during both grid connected and islanded operation. Fault currents in the islanded region might change and this can cause disoperation to the currently installed protective devices. Inverter based solar panel do not provide the levels of short circuit current sufficient to operate current sensing protective devices such as over current relays. If the protective relays were designed for small fault currents to satisfy the micro-grid operation, this might lead to unwanted tripping.

The protective devices should be capable to accurately determine when a micro-grid should be operated especially with the numerous abnormal conditions that might occur in the system. Besides that, sufficient co-ordinate fault protection should be provided to assure safe operation of the micro-grid. Safe operation and control of voltage during islanded operation of solar panel is another major challenge. The solar panel interface consist of single phase two wire grid interfacing to mitigate power quality

Electric bike with mileage enhancement

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***Abstract*- This paper aims to convert the old bicycle into an eBike along with mileage enhacement capability. The eBike has two motors, one as a motor and the other as a generator. The main idea of this project is to produce some voltage while working on the eBike slope and stored energy generated in the battery, which will further enhance the mileage of the eBike. A variety of batteries provide the power needed for motor operation. The project consists of two battery sets, the first battery set is used to operate the motor and the second set is fully discharged, which is automatically charged when operating the slope eBike.**

***Index terms*- Electric bike, mileage improvement, bldc motor, battery, eBay controller, adxl345 sensor**

I.INTRODUCTION

The idea of making electric motors has attracted cyclists since the late 1800s, and many American inventors have attempted to combine electric motors with the usual mechanics of bicycles. Until the technological breakthroughs of the 20th and 21st centuries, this idea was finally coming true. Light motors, batteries, rechargeable, high capacity, drive trains smoothly, bicycle parts provide a way to enjoy the benefits of today's electric bikes and fitness and physical needs. A bicycle, electric bicycle, also known as exercise or part of a daily e-bike trip, has an electric motor that can be used for propulsion. There are many types of e-bikes available on the market, from small motor-only e-bikes to more powerful e-bikes that are closer to the modern cycle of operation than the human effort of pedal power. Electric bikes are a new and better alternative to urban transportation. These provide all the benefits of a regular cycle: fun exercise, zero elimination, lack of strength to eliminate the most serious shortcomings of cycling. When you go downhill, consider hiking up the hill and it's an e-bike experience. In most cases in the city, riding an electric bike is faster and cheaper than a car or public transport.

The basic design of the eBike and parts is similar to other bicycles and includes an additional electric motor It is powered by means of a rechargeable battery, which gives riders greater power and in the end a smoother, more cozy and much less biking experience. The Ebike is a better choice than traditional bicycles and traditional vehicles because they are environmentally friendly, require less maintenance, have less motor output noise and are more efficient. The main goal of eBike is to overcome and expand pollution. Instead of a traditional vehicle. These eBikes have a high reputation abroad and the alternative to traditional bicycles improves the user experience due to the eBike experience. An ebike combines the benefits of a regular bicycle with a motorbike. It is an ecological means of transportation, with low maintenance cost, allowing you to move freely and easily without sweat. It is almost as environmental as bicycle because it requires very little power to propagate electric motors efficiently; Batteries need to be disposed of properly. This is cheaper because the cost of recharging the battery from your main socket is very low. However you should buy a new battery every 2 or 3 years. Being able to combine electrical support with your own pedaling effort, increasing electric motor support when you are tired or on the road can help you regain your right size. There are also cases where Ebike is safer than a regular bicycle.

II. COMPONENTS OF EBIKE

The ebike has the following components

BLDC motor:-

The bldc motor used the rating of 250w.This motor has been fitted into tyre of ebike.

Non Invasive E-Health Care Monitoring System using IOT

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***Abstract*- The E-health monitoring system is one amongst the main developments within the field of life science. An automatic wireless health monitoring system is employed to live patient's temperature, pressure, pulse etc. which are accustomed evaluate the health condition of the patient. Providing the collected information to the doctor and making proper decision on the information collected also notifying the patient is that the challenging task within the IOT. During this project, an IoT based E-health care monitoring system is proposed which is Non-Invasive in nature . As the population ages, there is a greater need to develop clinical and personal diagnostic tools. As wait times for medical attention increases, the automation of non-invasively collecting patient vitals could significantly improve the efficiency of modern health care. The system components are presented and their accuracy is discussed, along with suggested enhancements.**

***Index terms*- Non-invasive, Health monitoring, E-HealthCare, Pulse rate senor, Temperature Sensor, Heartbeat Sensor, Arduino**

I.INTRODUCTION

Health monitoring is the major problem in today's world. Due to lack of proper health monitoring, patient suffer from serious health issues.[1] Health Monitoring is becoming critical and in-affordable. More than 50 percent death occurs in patients who are not continuously monitored. Heart attack, high blood pressure, high blood glucose are parameters affecting the health of people. There are lots of devices available now days to monitor the health of patient over internet. But the treatment is impaired, because the diagnosis is Invasive and Non-Continuous.

A. What is health monitoring system?

The patient health monitoring system is one of the major developments in the medical area. An automatic wireless health monitoring system is used to measure patient's body temperature and heartbeat by using embedded technology. The sensors used in the system helps to monitor the condition of the patient.

B. What is Non-Invasive Patient Health Monitoring System?

Non-Invasive Patient Health Monitoring System does not involve the introduction of instruments into the body. They are increasingly helping people to better monitor their health status both at an activity/fitness level for self-health tracking and at a medical level providing more data to clinicians with a potential for earlier diagnostic and guidance of treatment.

C. Why Non-Invasive?

Everyone has had an experience, most of them unpleasant, involving sharp objects and blood. The main advantage of non-invasive methods is the relief from pain and discomfort due to frequent finger pricks.

II RELATED WORK

Modern health care system introduces new technologies like wearable devices or cloud of things. It provides flexibility in terms of recording patients monitored data and send it remotely via IOT. For this connection, there is need of secure data transmission .To transmit the data with privacy is the Moto of this paper. The proposed system introduces security of health care and cloud of things .System works in two major parts viz. storage stage and data retrieving stage. In storage stage, data is stored, updated for future use. In data retrieving stage, retrieve data from cloud.

The cloud server can share with authenticated user as per request. A patient with wearable devices continually updates his record every 5 or 10 min. In emergency mode, it updates for every 1min.The

Vehicular Movement Wind Turbine Generation

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***Abstract*- This project mainly focuses on generating a electrical energy from Wind Energy. The idea proposed here is a new technique to generate electrical energy from Wind energy produced due to the vehicle motion in highways and also solar energy will be used to charge the solar panel. Turbine mechanism adapted which is easy to implement. Cost effective without disturbing the current road design can be simply installed on the dividers or can be installed in gardens where there is tremendous wind energy and a ray of light to charge the solar cell. Wind power is extracted from air flow using wind turbines to produce electrical power. Wind energy as an alternative to fossil fuels, is plentiful, renewable, widely distributed, clean, produces no greenhouse gas emissions during operation and uses little land. The effects on the environment are generally less problematic than those from other power sources. Recently, in order to obey the policies of energy conservation and use of renewable sources of energy the power is generated by wind energy more.**

***Index terms*- wind turbine, wind power generation, electricity generation using wind, vehicular movement, wind turbines, generators, wind power generation, rotors**

I.INTRODUCTION

In this paper only power generation through wind turbine[4],[5] is discussed, as there many accidents taking place on the highways due to lack of lighting lamps or improper working of the street lamps or due to lack of electric supply. Even there are gardens or parks where there are no lighting lamps. Also, the wind and solar energy is a renewable energy resource and can be used for generation of electricity, which then will be used to light the lamps and for other purpose if required. And this electrical energy can be used for many applications besides lighting the street lamps. Also, this energy can be stored in a battery and can be used whenever there is lack of wind energy or solar energy due to less vehicles.

Energy is an important factor in the process of economics, social and industrial development. Energy sources that do not get exhausted are non-conventional renewable energy sources which include solar, wind, water. The power available in the wind increases rapidly with the speed hence wind energy conversion machines should be located preferably in areas where winds are strong and persistent. High speed wind energy generators fabricated now-a-days have only two blades and can deliver power from few hundred KW to a few MW. Also, the solar energy can be used to charge a solar panel and be used as a backup process if the wind is less due to any reasons. Derived energy can be converted to other forms of energy or can be stored through use of compressed fluids, batteries, hot water, water saver system etc. Wind powered pumps can be used to save fuel and electricity.

Electricity generation is the process of generating electric power from sources of primary energy. A characteristic of electricity is that it is not freely available in nature in large amounts, so it must be "produced" that is, transforming other forms of energy to electricity. Production is carried out in power stations (also called "power plants"). Electricity is most often generated at a power plant by electromechanical generators, primarily driven by heat engines fueled by combustion or nuclear fission but also by other means such as the kinetic energy of flowing water and wind. Other energy sources include solar photovoltaic and geothermal power.

A.WIND TURBINE TYPES

A wind turbine, or alternatively referred to as a wind energy converter[2], is a device that converts the wind's kinetic energy into electrical energy. Wind

Smart System Using Solar Pannel for Irrigation

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***Abstract*- India is the most populated country after China in India three fourth of Indians will live in cities by 2030 and water supply and demand is up to 9600 crore liter/day. As per the estimated majority of water is wastage due to overwatering which followed by traditional irrigation system by adopting smart irrigation system water wastage will below and it is the best solution. This system monitors soil condition and plant water used automatically and adjusts according to schedule. This is one-time investment project**

***Index terms*- Microcontroller, IOT, Sensors, Gsm Module**

INTRODUCTION

Agriculture is the backbone of all developed countries. It uses 85% of freshwater resources worldwide and this percentage continues to increase because of the growth of population and increasing food demand. Due to this water management is a major concern in many areas. In agriculture, two things are very important first to get information about the fertility of the soil, and second is to major moisture contained in the soil. Nowadays for irrigation different techniques are available which are used to reduce water consumption as well as a dependency on rain. In this technique all sensors are placed to the field and give current information to farmer cellular phones for about soil condition is dry or wet and accordingly, microcontroller passes signal automatically to the pump.

LITERATURE REVIEW

Joaquin Gutierrez (2013) purposed access units which transfer the information to the web application. It has a two-way communication link and it also powered by a solar panel. This two-way communication link is based on the internet for irrigation scheduling and data infection through a web page [1].

Prof C. H. Chavan and P. V. Karnade (2014) purposed a smart monitoring network for environmental parameters using Zigbee. This network sends information wirelessly to the server, which collects all information from the network and analyzes and send to farmer cellular phone. This system doesn't monitor nutrients in the soil and weather forecasting [2].

Karan Kansara (2015) proposed an automatic irrigation system that uses many sensors in the field and accordingly the temperature, humidity, and soil moisture content sensors are passed the signal to the microcontroller. This system doesn't monitor nutrient in the soil [3].

Archana and Priya (2016) proposed a paper in which soil moisture sensors and temperature sensors are placed in a field. Then these sensors will sense the value and microcontroller is used to control the supply of water in the field. This system doesn't send current information to farmer cellular phones [4].

V. R. Balaji and M, Sudha (2016) proposed a paper it uses solar panel for electricity. In this system, the soil moisture sensor is placed in a field that sends sensor information to the microcontroller and accordingly the motor pump will ON / OFF. This system doesn't monitor weather forecasting [5].

PROPOSED SYSTEM

Nowadays the agriculture field is facing various problems such as lack of rain due to global warming. To help farmers smart irrigation system is used. In this system, DHT11 and soil moisture sensor are placed in a field which sends the information to the Arduino microcontroller this sensed value from sensors are displayed in LCD. If sense value goes beyond the preset value than the pump will automatically turn off by relay circuit. In this system GSM module also used for receiving current information about land on their cellular phone.

BLOCK DIAGRAM

Beach Cleaning Robot

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***Abstract*- This project based on design and fabrication of the beach waste cleaning machine. The work has done looking at the present situation of our oceans which are dump with corer liters of sewage and loaded with pollutants, debris, toxic materials, etc. The government of India has taken possession to clean oceans, beaches and for that many projects are done in various cities. By taking this into exercise, this robot has designed to clean beach surface. The design of robot on using wireless Technology such as GSM application. Radio frequency application. The robot connected to solar panel. The user can control the robot via a program . The commands from user are sent via radio frequency controller for processing, By wireless communication and collect the garbage, waste like like glass, bottles, plastics and papers, etc. From the experiment, it can be clearly indicated that the robot is superior to handle, good control capability, and operate environmentally friendly.**

***Index terms*- Solar panel, Robot, Chaupati, Machine**

1. INTRODUCTION

In present days, the world has become a very busy. This is mainly because of the rapid increase in population as well as different resources. Along with these two factors, there is another factor which is increased at very high rate, which is the amount of garbage is to be disposed. This has become one of the biggest problems which are not just for our country, but the whole world has come to face today. This problem is not limited to the towns and cities, but even in villages, the collecting and disposing of garbage has become a head ache for the community and also for the society. With related to human beings health. Hygiene and cleanliness of the environment, the garbage disposal is very important. The most common ways of disposing garbage are bins and bags, both these methods are implemented manually. This means that garbage disposal becomes a very highly time-consuming and difficult process, and places such as schools, restaurants, hotels, offices etc. To overcome this possible adversity, an automatic system, implemented with the use of electronics, introduced in some places, would prove to be highly efficient. It would do the job done easily, with minimum labor and hazards to health, as well as time and money being saved in the process. This idea was the basic background for us to undertake this project. The thought of easily doing the task of collecting and disposing garbage was highly motivating, because as we are university students, we are very much familiar with this job. So that is where the base of our project was laid.

2. LITERATURE SURVEY

The main motive of this project is to develop a automated waste cleaning and waste disposing machine. We decide to make a machine based on microprocessor so that we can control it very effectively. Before start to making the project we are doing some surveys. While did that surveys we are visited some areas in our city (Mumbai). And observed the different conditions of that place.

Firstly we are going to Dadar chaupati, when we reached there we saw that tremendous amount of plastic bottles, Glass bottles, Plastic bags, etc. are everywhere. And also all the peoples which are present there no one will think about that they are only enjoying their eat something and throw the rapper of it anywhere. After sometimes spend at dadar chaupati. We are went to Girgaon chaupati where we see the same conditions as like dadar chaupati, after that we are going to aksa beach, where we saw that very large amount garbage is there than the dadar and girga on chaupati.

Harmonics Detection and Measurement in Power System

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***Abstract*- In the present decade usage of Nonlinear loads and power electronic device in the industry sector has been increasing. Due to this the harmonics in the system get affected more and it gets result in the nonlinear electric loads. Harmonics are determined to have tremendous effects on power system Equipment including Induction motor, Transformer, Conductors, Capacitor banks, Switchgear, and Protective relay. The count of harmonics producing loads has been having the drastic effect over the years. Now it has been became increasingly necessary to detect them by making changes to a system installation. Aiming towards the Improvement of Power Factor and Elimination of Harmonics induced in the system due to non-linear loads. This method helps to improve power factor and eliminate harmonics, so the power fed to the loads will be of better quality. This will not only reduce the penalization over consumers but also lead to run the load to their maximum efficiency.**

Further, the circuit of PF correction & detection similarly the Harmonics measurement and correction simulations are presented over Proteus Software. This tool helps to carry out trial and error method of the circuits. The calculated values will be fed to the Controller circuits which carry out programmed operations to get the desired outputs which are displayed over the LCD.

***Index terms*- Nonlinear loads, Harmonic currents, Power Distribution system, Voltage distortion, Power Signal Quality, Harmonic Distortion, Power supply Quality, Harmonic Analysis, Total harmonic distortion (THD), Fast Fourier Transform (FFT).**

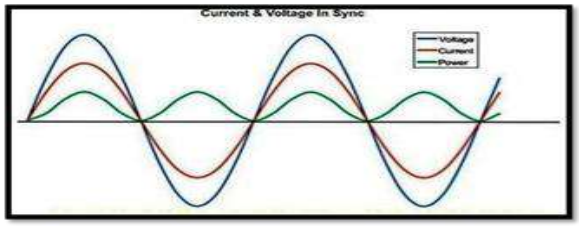
1. INTRODUCTION

Every industry needs to implement power factor corrector & Harmonic Compensator to limit power wastage and to avoid penalty due to the same. But the same technique should be there for domestic level with small load in the house. In this system we proposed the technique for the proper utilization of the sources available with the input at the home level. One of the most dominating sources available is mains supply from the MSEB and primary backup is Inverter. As the Technology is increasing day by day it should tends to improve, the extreme use of power electronics equipment in power system arises and then the harmonics comes in the system operation picture which cause the negative impacts on power system and trouble it's working. The power quality which defines that it is a set of electrical boundaries allowing a device to function in its intended manner with no significant loss of performance or life expectancy. Various methods and techniques were used to improve the power quality. Harmonics are voltage or current with frequencies which are integral multiplies of the fundamental power frequency. Harmonic current is one of the main concepts which affect the quality power and they are supplied by the nonlinear equipment, which affect the desired linear system. Common risk of harmonics include excessive heat in the system, tripping of the branch circuit breaker and rapidly increasing maintenance cost, Fire hazard. The harmonic component in an Ac power system is nothing but the sinusoidal components of a periodic waveform which has a frequency of an integer multiple of the fundamental of the system.

It can be given as:-

Fh = n*fundamental frequency.

Where fh= Harmonic order, n = Integer. The frequency is either 50Hz or 60Hz.



High Voltage DC Generation Using Dual Channel Marx Generator

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***Abstract*- Marx generators can generate high-voltage pulses using several, similar stages that run at a fraction of the total output voltage without the need for a step-up transformer that limits pulse rise times and decreases device performance. Every stage in Marx involves a network forming condenser or pulse, and a high voltage switch. Such switches are usually spark gaps resulting in low repetition rates and Marx generators Lives tight. Developing economical, compact, high voltage, high di / dt and fast turn-on solid state switches makes it easy to build cost effective, longlived, high voltage Marx generators capable of high pulse repeat rates. Standard impulse waveforms have similar characteristics to those of lightning strikes and can be used to test the strength of electrical equipment. Marx generator is the most popular and widely used method for producing high voltage pulses.**

***Index terms*- Marx Generator, High Voltage Pulses, Transformer, Switches, Spark Gaps, Low repetition rates, High pulse rate, Standard impulse waveforms, Lightning strikes**

1. INTRODUCTION

The Marx generator is a device used to generate a high pulse. The operation of this device shall be based on the following principle:

The condenser connected in parallel is first charged with electrical current and then carried out in series with the various switching devices. This results in an increase in the output voltage in proportion to the number of connected capacitors. When the capacitor is charged, the generator will be started after the first discharge is discharged. Overvoltage at different discharges forces all the chargers to be operated almost simultaneously, which triggers a series of connections to the charged capacitor. The Marx generator can be used to produce tens of kilovolts to ten million volts of pulse.

The pulse rate of the generator depends on the pulse capacity of the generator and constitutes anything for a single pulse per hour to several tens of Hertz.

The total losses in the discharge mode are the losses in the capacitors and the gaps in the spark and the load resistance Marx's high voltage pulse generator in various scientific studies and in the performance of all kinds of technical tasks. In some units the generators operate instead of the current generators.

1.1 BASIC STRUCTURE AND LITERATURE SURVEY

The Marx generator is a type of electrical circuit, the purpose of which is to generate a high-voltage pulse by a number of condensers, which are charged in parallel and then connected in series by spark gap switches.

The Marx generator is a type of electrical circuit first described by Erwin Otto Marx in 1924, the purpose of which is to generate a high-voltage pulse. It is widely used to simulate the effects of lightning during high voltage and aeronautical testing. Sandia National Laboratories use a bank of 36 Marx generators to generate X-rays in their Z Machine. It can also be used as an ignition switch for thermonuclear equipment.

High voltage technology for electrical power generation and transmission systems was introduced at the beginning of the last century. Long before this effort was made to study the lightning characteristics of the indoor lab in order to perform the power system Equipment to protect them from the hazards of lightning strikes. A number of theories on the

Review of Microstrip Array Antenna for various Applications

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***Abstract*- Various types of antennas are used in various application. Orientation and structure plays important role in performance parameters. In this paper various techniques are studied and better technique is quoted with output using simulation. HFSS software is used for results. Simulations of linear array with and without meander is shown in results. Different types of Array antenna performance is studied and observed for best suited applications.**

***Index terms*- Array, Directivity, Isolation and Metamaterials**

I.INTRODUCTION

Antennas are used to transmit and receive signals as it acts as transreceiver and hence selection of antenna based on its properties and characteristics is very important as well as crucial. Directivity of an antenna must be high in order to have less losses and for high performance. Total internal reflection should be more so that maximum signal reaches destination and return loss is minimum. Interference between two adjacent antennas are more and it should be minimized. So proper technique is required to reduce interference and increase isolation which improves efficiency of an antenna and overall system.[1]

Array of antenna is required for the system where communication throughput requirement is high and latency low. M*N array elements where M is elements across x axis and N is elements across y axis which forms an array. Based on lattice of formation array can be of rectangular, circular and square shape as antenna varies. Spacing of antenna should be half wavelength.[6]

Depending on placement of microstrip patch array, array can be linear array, rectangular array, circular array etc out of which few have been studied and simulated for characteristic performance.

II. METAMATERIALS

Microstrip patch antenna is preferred due to its small size, compatibility and easy to fabricate .Antenna has substrate and patch made up of copper. Metamaterial is material which doesn't exist in nature but can be achieved by configuration and structure changes in materials. Permittivity is considered to be negative and permeability to be negative in order to have maximum total internal reflection so that efficiency of an antenna increases as gain increases and S21 also increases. Different types of structures are available in order to incorporate to be metamaterial but meander structure has proved to be better among all.[7]

III. ARRAY ANTENNA

Antenna used in various combination results in huge amplification of signals which can be used in various applications. For example linear array antennas can be used for automotive car application, square array antenna 4*4/8*8 array can also be used for automotive vehicle, aero planes etc. Some application requires antenna to orient in 360 degree for aerial route, so circular array antenna plays important role and the design of circular antenna array with central element suitable for beam forming technique in wireless applications can be considered. A circular arrangement of eight circular sector microstrip antennas improves beam steering in all 360 degree. Also light weight feature should be considered so that substrate can be used with foam and aluminum. Numerous studies of smart antennas have already been conducted using linear or planar arrays, but performance of smart antennas with circular array and circular array with central element proves to be better solution. Comparison of all array will give clear idea of its usage in various applications[8]

IV. RESULTS

Van De Graaff Genrator

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Abstract— This paper is the practical implementation of the Van de Graaff generator. This paper proposes the design and operation of the high voltage electrostatic dc generation. The principal of this system is to convert the static energy into the high voltage electrical energy. A Van de Graaff generator is an electrostatic-accelerator which is used in the scientific experiments to produced high voltage in the less time with a high safety factor. The generated charge is used to speed up subatomic particles. It produced very high voltage up to the 5 mega volts. This device is commonly in the physics and high voltage laboratory, to get the high electrostatic charge. it can also be used in radiotherapy and also as a electrostatic precipitator for cleaning the waste gas . This study presents a solution to the problem by proposing a very economical design of Van de Graaff generator. Table top Van de Graaff generators develop over 200,000 Volts and floor models offer up to 1,000,000 Volts of high voltage lightning electrical discharges.

Keywords: Electrostatic Machine, Van De Graaff Generator, Triboelectric Series and Electrostatic Precipitator

I. INTRODUCTION

Electrostatics was first noticed sometime in 600 B.C. when the Greek philosopher Thales discovered that amber attracted light objects when rubbed. The phenomenon demonstrated a fundamental concept of electrostatics. It is an elementary physical fact that extremely high voltages can be generated by friction. This fact is the base concept of functioning of Van de Graaff generators. The Van de Graaff generator is named after Dr. Robert J. Van de Graaff who patented his electrostatic generator in 1935. He developed this generator for studying the acceleration of charged particles to explore the atom. The Van de Graaff generator is an impressive electrostatic generator that is capable of producing enormously large static electric potentials. More modest "class room" sized Van de Graaff generators typically produce 100,000 V to 500,000 V. The output of this device was applied in several fields of physics, astrophysics, medical and industry. In the same way is very useful in teaching corona discharge and electrostatics phenomenon. The van de graaff generator, which was developed the of year 1920.in our project we can used 230 volt motor of rpm 9500.and also The material use for our dome is Steel also the discharge dome is made up of steel. and also we can used two different material of roller for accumulate the charges. For calculating such a large high DC voltage we use Sphere gap method. In this method we take two reading that is of temperature and pressure of our working area. For showing the application of van de graaff generator as Electrostatic precipitator we create a smoke in between two dome that is main dome and discharge dome and get surprising result that the amount of smoke is reduced after passing through that gap.

II. LITERATURE SURVEY

In this paper we are discussing about the principle of the van de graaff generator. bassically Van de Graaff generator is an electrostatic generator which is use to create the static energy into the high voltage electrical energy. this experiment is based on the triboelectric effect, where in simple contact of two dissimilar material causes the transfer of some electrons from one material to another for example the rubber belt will became a negatively charged while the nylon of upper roller will became positively charged. To understand the bases of a Van de Graaff generator it is important to understand static electricity. Static electricity is an imbalance in the amounts of positive and negative charges in the surface of an object. Some atoms hold on to their electrons more

Positive	Polyurethane foam	(continued)
	Etylcellulose	Polyester (Dacron)
	Sorbothane	Polyisobutylene
	Polyamide 6-6	Polyuretane flexible sponge
	Hair, oily skin	Polyethylene Terephthalate (PET)
	Wool, Knitted	Polyvinyl butyral
	Silk, woven	Polychlorobutadiene
	Aluminum	Natural rubber
	Paper	Polyacrilonitrile
	Cotton, woven	Polystyrene
	Steel	Polyimide
	Wood	Neoprene
	Hard rubber	Polyehylene
	Nickel, copper	Polypropylene
	Sulfur	Polyimide (Kapton)
	Brass, silver	Polyvinyl chloride (PVC)
	Acetate, Rayon	Latex (natural) rubber
	Polymethyl methacrylate (Lucite)	Santoprene rubber
	Polyvinyl alcohol	Polydimethylsiloxane (PDMS)
	(continued)	Polytetrafluoroethylene (Teflon)
		Negative

Fig. 1: Triboelectric series

Tightly than others do. How strongly matter holds on to its electrons determines its place in the triboelectric series.

A material is more positive in this series if is more apt to give up electrons and more negative if is more apt to capture electrons when in contact with other materials. Another important factor in electrostatics is humidity. If it is very humid, the charge imbalance will not remain for a useful amount of time. Humidity is the measure of moisture in the air. If the humidity is high, the moisture coats the surface of the material, providing a low-resistance path for electron flow. This path allows the charges to "recombine" and thus neutralize the charge imbalance. Likewise, if it is very dry, a charge can build up to extraordinary levels, up to tens of thousands of volts.

if the size of the dome increases then output voltage and the spark gap also increases this can be shown in below figure, In our project we use single phase capacitor start motor for running the belt which is made up of nylon,

IoT Based Home Automation Using Adafruit and Google Assistant

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Abstract— In this age of digitization and automation, human life is getting simpler because almost everything is getting automated, replacing the old manual systems. For developing nations like India, the consumption of electricity is higher. Also, many people forget to switch off the lights when not in use, this led to wastage of electricity in huge amounts. This paper describes a low cost and scalable framework for home control and monitoring the environment. It employs an inbuilt micro-web server in the NODE MCU(ESP8266), with remote access to and control of devices and appliances via IP address connectivity. These devices can be operated through a web application or an Adafruit app based on Wi-Fi or via voice control (like Google assistance). So it will become easy and comfortable for humans to control the appliances from wherever in the world and switch off the lights if they forget to do so and saves electricity.

Keywords: NodeMCU, Adafruit, IFTTT, MQTT, 16 channel Multiplexer, DHT11 Sensor

I. INTRODUCTION

Internet of Things is a term where each device is assigned to an IP address and everybody makes that device visible on the internet via that IP address. This essentially began as the "Internet of Computers." Research reports have projected an exponential rise in the number of "things" or devices linked to the Internet. The network that results is called the "Internet of Things".

The IoT devices track and manage the electronic electrical and mechanical systems used in various fields. A single administrator controls the devices connected to the cloud server which facilitates a number of users to whom a number of sensors and control nodes are linked. The admin can access and manage all nodes that are connected to each user but only the nodes to which the user is connected can be managed by a single user. This whole system using the Internet of Things (IoT) would allow mobile devices and computers to remotely control all the functions and features of home appliances from anywhere in the world using the internet connection.

The built system is economical and can be extended, as it enables a variety of different devices to be connected and managed.

Fig. 1

II. COMPONENTS REQUIREMENT

A. *Node MCU (ESP8266):-*

NodeMCU is an open-source platform and development kit that use to build IoT projects. It includes firmware that running on 'Espressif Systems' ESP8266 Wi-Fi SoC, and hardware-based on theESP-12 board. The firmware uses the Lua scripting language. It is based on the eLua project, which is based on the ESP8266 Espressif Non-OS SDK. Node MCU (esp8266) is selected as the controller for this project due to its compact size, low cost, reliability, easy interfacing over several other types of controllers including the Programmable Integrated Circuit (PIC), the Programmable Logic Controller (PLC) and others. It allows controlling inputs and outputs as you would do with an Arduino, but it comes with a Wi-Fi Module chip that can be configured to connect to the internet. So, it is great for IoT base home automation and other IoT application. It operates at 5V, it have 128kb of memory and 4mb of storage. It has 1 ADC input with a 1024 step resolution.

Fig. 2

B. *16 Channel Analog Multiplexer:-*

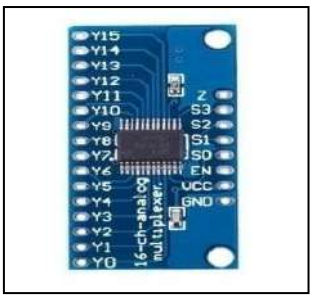

Fig. 3

Node MCU has only one ADC pin so it is difficult to connect several analog sensors to it, but with help of 16 channel analog multiplexers, it is possible to expand i/o analog pin of Node MCU. This multiplexer is a breakout board that mounts a 74HC4067. It can handle analog signals such as a signal from analog sensors or it can handle digital signals such as signal digital sensors or even serial communications. The Operating range of 74HC4067 is 2V to 6V DC; hence it is compatible with both 3.3V and 5V microcontroller and board such as Node MCU. It uses binary addressing, so channel 0 is address 0000, address 1111 is channel 15. When a channel is ON it has resistance around 70 ohms which allows the signal to flow in both the ways.

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Modified Perturb and Observe MPPT Algorithm for Drift Avoidance using SEPIC Converter

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Abstract - *MPPT (Maximum Power Point Tracking) is a commonly used technique for extracting maximum possible power from solar photovoltaic (PV) systems under all conditions. Out of various methods used for achieving MPPT, perturb and observe (P&O) is very popular and widely accepted method owing to its simple nature, ease in implementation and high efficiency. However, P&O algorithm has drawback that it suffers from drift phenomenon. Which results in drifting away of algorithm from maximum power point during sudden change in atmospheric conditions. Therefore it becomes essential to do modifications in traditional P&O algorithm for drift avoidance. The new algorithm which thus implemented is termed as 'Modified P&O Algorithm' which takes change in current, voltage and power into consideration. This new algorithm is verified using MATLAB/Simulink. SEPIC converter is used for controlling DC to DC power flow by controlling output (load) voltage. Results are tested on simulation as well as hardware setup. Results prove that modified P&O algorithm is drift free algorithm and it can track maximum power point under any changing atmospheric condition.*

Key Words: Maximum Power Point Tracking (MPPT), Per-turb and Observe (P&O), PV, drift phenomenon, SEPIC Con-verter, MATLAB/Simulink

1. INTRODUCTION

Because of clean nature solar energy does not produce any environmental hazardous emissions. It is very widely available in India as well as in the world. These are some positive points of solar energy. But as far as its utilization for Electrical power generation is concerned, its fluctuating nature due to different atmospheric conditions is a major issue. Because of this, efficiency of gaining Electrical energy from solar energy (converting solar energy into electrical energy) affects drastically.

Maximum Power Point Tracking is a systematic approach which takes efficiency of solar PV system as a highest priority task into consideration. Various algorithms have been put forward to achieve this. Out of these various algorithms, 'Perturb & Observe' MPPT algorithm became most popular owing to its simplicity, superiority, ease in implementation etc. It is very efficient in nature. The principle of its working is, perturbation of voltage and power in any direction in such a way that operating point should follow the direction where power drawn from PV system is maximum. Reduction in the power output by perturbation is also possible in the similar way. Simply speaking it is an algorithm which keeps system oscillating very near to maximum power point (MPP). [1] – [8]

Drawback of this algorithm is that changing atmospheric conditions badly affects its performance which is the main cause of 'drift,' due to which maximum power point tracking cannot be properly achieved, which in turn results into decrement in efficiency. This paper presents modification in conventional P&O algorithm by including change in current into loop (dI) which gives rise to new algorithm, i.e. 'Modified P&O Algorithm.' Drift avoidance is possible by modified P&O algorithm. This paper mainly focuses on SEPIC converter design and ratings of its components for hardware in section II. Section III describes traditional Perturb & Observe Algorithm along with flowchart. Section IV covers modified Perturb & Observe Algorithm along with its drift free nature. Simulation model & experimental hardware set up along with results are discussed in section V. Paper is concluded in section VI.

2. SEPIC converter & its components ratings

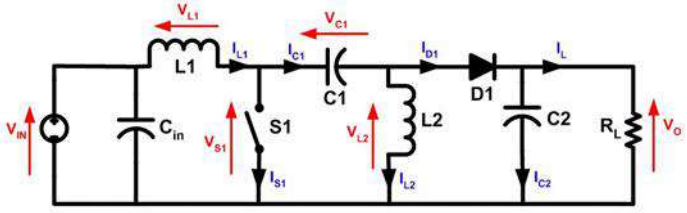

Fig. 1 SEPIC converter circuit diagram

Power Generation Using Hybrid Renewable Energy Resources

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Abstract: Now a day, with increasing concern of depletion of fossil fuel reserves and global warming, there is a great demand of using sustainable energy as alternative to preserve and save the earth for future generations. Hydro, wind, geothermal, biogas and tidal power are some of many alternative power sources which have a great potential to meet our energy demands, but they need a lot of space and a huge initial investment, whereas piezo and solar power can also meet our energy demands and also needs less space and initial investment is also low. We will be generating power from vibration energy by using piezoelectric sensors solar energy by using solar panels and wind energy by using windmill. This project demonstrates the Solar-Wind- Piezo Hybrid Power system that harnesses the renewable energies in Sun, Wind and Piezo to generate electricity. System control relies mainly on micro controller. It guarantee the ideal usage of resources and therefore upgrades the efficiency as compared with their individual mode of generation. Also it expands the reliability and minimizes the dependence on one single source.

Index Terms **- piezo-electricity, Hybrid power system, buck boost converter, ATMega328.**

I. INTRODUCTION

Energy is present everywhere in our surrounding, it totally depends on us that we utilize this energy for practical or devastating purpose. Energy can be classified into conventional and non-conventional energy. The traditional sources of energy are generally non-sustainable sources of energy, which are being used since a long time. These sources of energy are being used broadly in such a way that their known reserves have been exhaustted to a great extent. These traditional sources are generally fossil fuels. Their use leads to increased greenhouse gas emissions and other environmental damage. Renewable Energy has many advantages that make it a desirable energy source, especially in parts of the world where the transmission infrastructure is not fully evolved. It is standard and can be installed comparatively quickly, so it is easy to match electricity supply and demand. The increased integration of sustainable power generation technologies is of essential importance in conserving natural resources and reducing CO^2 emissions.

The fuels, Solar, tidal and Wind are free and profuse, which eliminates or reduces the need to purchase, ship, and store expensive fuels. It is adaptable with the power generated, households use can use appliances, such as lighting and refrigeration, schools can use computers, televisions and projectors, and industries can access a dependable power source. Perhaps most importantly, the generator does not produce any harmful emissions in the process of generating the electricity, unlike many other generation sources.

Industry, utilities, municipalities and private individuals are all looking for tailor-made solutions that will enable them to achieve economic and ecologic targets, while at the same time ensuring increasingly independent, decentralized, grid-connected power supply. The future lies in environmentally acquiescent on-site power generation systems that can be interconnected to respond flexibly to operating demands and therefore remain commercially viable. In other words, the future lies in hybrid systems.

Energy produced by using solar, tides, geothermal heat, wind, and biomass together with animal waste, farm, and human waste is known as non-conventional energy. All these sources are renewable or unbounded and do not cause environmental pollution. Moreover, they do not require heavy expenditure. So in this paper we are trying to harness Vibration,

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Energy audit: Case study of an Institute

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ABSTRACT

India's economy is affected immensely by the consumption of energy. Excessive use of fossil fuels for the generation of energy not only increases emission of greenhouse gases but it also increases the cost of energy. In this project we highlight that Energy Audit is a continuous process to minimize the losses occurring at consumer end. By suggesting an alternative energy source, the thesis of this project, provides an opportunity to reduce carbon footprints, become energy efficient and in turn support capital investment.

Keywords— *Energy audit, Energy conservation*

1. INTRODUCTION

The College of Engineering was established in 2009. It has a vast infrastructure and significantly huge electrical system. It is an accepted fact that it spends a large amount of financial resources on providing uninterrupted energy throughout the campus. Execution of audit on this campus has given us a brief knowledge of total installed load and consumption pattern. Thus, providing energy saving opportunities. The college is located in Maharashtra. Power to this area is supplied by MSEDCL.

2. INSTITUTE

2.1 Architecture

The College is divided into 4 blocks i.e. A, B, C, D block. These four blocks have different metering panels for separate load panels. The load in each floor is varying and has its own power supply from the main node.

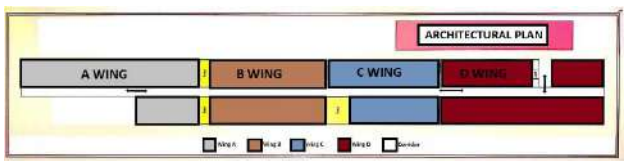

Fig. 1: Architectural Plan

2.2 Distribution System

MSEDCL supplies 22kV HT supply to the college which further is stepped down to 415V by 1000 kVA transformer. This 415 V is distributed to the main node of the engineering building. An APFC with a rating of 340kVAR is installed to maintain the P.F close to unity. In case of power failure there is an emergency backup DG set which provides electricity to the engineering building. The supply to the engineering building is from the main node which then distributes power to A, B, C& D block. All the blocks have their independent power meters.

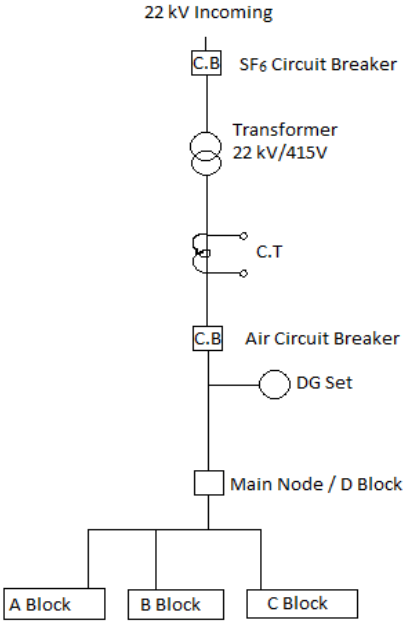

Fig. 2: Single Line Diagram

3. METHODOLOGY

3.1 Data Collection

3.1.1 Load Survey: The total installed capacity has been audited from Sept. 2019 to Jan. 2020 which provides profound insights of the demand load. This further gave us the knowledge of the total connected load on the four wings of the building. The categorization of load is done, which gives us in-depth knowledge of types of load. The entire connected load of the building is 258.45 kW comprising of loads like light, fan, AC, Computer, Cooler as well as 3phase load.

Mobile App for Rural Development and Governance of Village Centric System – MCDM Approach

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Abstract— Previous decade technological revolution in the field of computer investigation are utilizing android application which are programming application which make the issues simple to settle as well as are easy to use subsequently popular because of its open source nature. This application is for those clients who are associated with Geographic Information Systems (GIS) where the reason for the present examination is to show applications that improve the GIS involvement with our cell phone. For complex arrangements in deciding basic and touchy information programming organizations in the field of innovation utilizes Decision Analysis Module Excel (DAME) which are modified based worksheets. Target of this examination is to improve to current existing strategies for figuring loads of different other options and to make it mistake free and less tedious. It additionally lessens the assets required via computerizing the process. An application subject to android organize has been discussed to commit this work less slanted to errors and extraordinarily capable.

Keywords: multi criteria decision making, ranking, rating, GIS

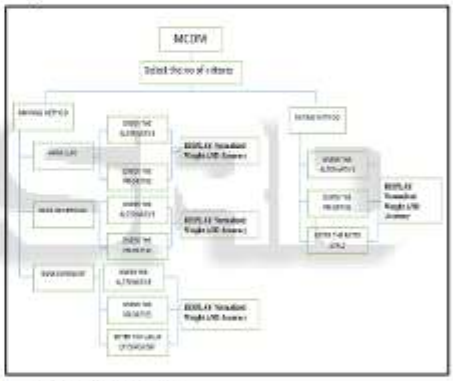
I. Introduction

This examination intends to make an Android application fit for assisting with ascertaining the loads and needs relying upon the client. Multiple-criteria decision-making (MCDM) is a strategy that joins the introduction of decision choices over a couple, refuting, abstract and also quantitative criteria and results in an exchange off game plan. Pertinent techniques are every now and again material, certainly or expressly, in various genuine issues and can be experienced in various exercises where sets of choice options are assessed against clashing criteria. Multi-Criteria Decision Analysis (MCDA) is a general framework for supporting complex essential initiative conditions with various and normally conflicting focuses on that accomplices get-togethers and moreover boss' regard in a startling manner. MCDA is a "conventional term to depict an aggregation of formal philosophies which hope to survey various criteria in helping individuals or social affair research decisions that issue". It is essential to handle such issue which incorporates different criteria like receptiveness, great ways from road and business focus, landform, LULC (Land Use land Cover), etc. Multi-Criteria dynamic strategies like positioning and rating technique are reasonable to take care of such issues.

II. Ease of Use

This literature survey presents a Microsoft Excel include called DAME – Decision Analysis Module for Excel. Standing out from other PC programs DAME is free, can work with circumstances or various pioneers and features moderate calculations. Customers can structure their decision models into three levels – circumstances/customers, criteria and varieties. Things on all levels can be surveyed either by burdens or pair-wise assessments. – Satya's Method, Geometric Mean Method and Fuller's Triangle Method. Multiplicative and added substance blends are upheld keeping up the Integrity of the Specifications. As indicated by writing audit are exhibited so as to reveal, order, and decipher the ebb and flow explore on PROMETHEE strategies and applications

A. System Architecture



B. Problem Statement

Rural development is a strategy designed to improve the economic and social life of rural villagers. It is the process of improving the social, economic, and cultural conditions of a village or small town.

We can tackle this with the help of MCDM approach. Multi-Criteria Decision Making (MCDM) deals with decisions involving the choice of a best alternative

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Natural Language Query Processing for SQL And NOSQL Queries

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Abstract: **This document present an approach to convert Natural Language Query to SQL Query and NoSQL query effectively. Query Language is a tool for managing data held in a database management system. To retrieve or manage data user have to enter the correct SQL and NoSQL Query. But the users who lacks any knowledge about SQL and NoSQL are unable to retrieve the required data. To overcome this, we proposed a system in Natural Language Processing for converting the Natural Language Query to SQL and NoSQL query. This helps no user to get required information without knowing any complex details about SQL and NoSQL.**

INTRODUCTION

Databases have applications virtually altogether info systems like transport information system, financial information system, human resource management system etc. The continues increase within the size of information and quality within the relation among the entities have resulted in sophisticated SQL and NoSQL question that are terribly difficult to write for an ordinary user. It additionally needs user to understand details of information such as relations, entities and object notation etc. The main problem is that the users who want to get information from the information, doesn't grasp formal languages like SQL and NoSQL.

LITERATURE REVIEW

Query Language is a tool for managing data held in a database management system. To retrieve or manage knowledge user need to enter the proper SQL and NoSQL queries. But the users who don't have any knowledge about Database query language are unable to retrieve the required data. To overcome this, we have a tendency to plan a model in natural language process for changing the tongue question to SQL question. This helps novice user to urge needed content while not knowing any advanced details regarding SQL. Technologies used are Natural Language Query, Natural Language Processing, Speech-to-Text, SQL, Syntactic, Semantic, and Data Dictionary.

EXISTING SYSTEM

A. Tokenization

System will perform tokenization on the entered query by separating it into single words. Each word represents a token. Then these words will be stored in a separate list and passed to Lexical Analyzer.

B. Lexical Analysis

The tokenized list will be mapped with the dictionary. These words will get replaced by the database words from the dictionary and passed to syntactic analysis.

C. Syntactic Analysis

In this step dictionary of table names, attributes and keywords are maintained. Each tokenized word gets mapped with attributes in the dictionary. It is passed to Semantic Analysis for further processing.

D. Semantic Analysis

System will find words which represent conditions or symbols and that word will get mapped with the dictionary. (For Example: If there is "less than or equal to" in the query, it will get mapped with the symbol "<=").

PROPOSED SYSTEM

SQL queries a database is a computer device that stores a set of information. In a relational database, information is stored as arrays, called tables. A relational database can have one or more tables, linked or not to each other. Inputs (information) are gathered in what are called columns (or fields). A group of columns relating to the same entity (object) forms uneatable. A schema, also called a data model.

NoSQL are database that just not only stores data in tabular form but also has certain functionalities. NoSQL was developed to tackle modern technologies requirements. NoSQL mostly use to retrieve or store data in big data, e.g. Hadoop, etc. some database based on NoSQL are mongo DB, Cassandra.

Android Based Attendance And Prediction System

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Abstract:-

Android based Attendance and Prediction System can be used by any business institutes or colleges to maintain the records of students or employees easily. The creation and the board of precise, forward-thinking data with respect to an understudies' scholastic vocation is fundamentally significant in the college just as schools. Android Based Attendance And Prediction System manages all sort of understudy subtleties, understudy results, expectation of understudies result, notes refreshed by staff, scholarly related reports, school subtleties, course subtleties, educational plan, group subtleties, position subtleties and other asset related subtleties as well. It will also have faculty details, batch execution details, students' details in all aspects, the various academic notifications will be send to parents by the staff. It provides minimal error in report generation of a particular student's attendance and prediction of students results. The main motive behind this software is to replace the traditional pen and register system. Prediction system is use to predict marks of students depending on their Unit Test Examination and Attendance monthly. This can also identify whether the student is slow learner or fast learner.

I. INTRODUCTION:-

These days, cell phones have become a lifestyle for understudies particularly in advanced education. PCs are currently supplanted by smaller PDAs that can fit into take and can be conveyed anyplace. Attendance System is an application for taking daily attendance in schools and colleges. It provides minimal error in report generation of a particular student's attendance. The main motive behind this software is to replace the traditional pen and register system. Another reason for developing this software is to generate the report automatically at the end of the session or in the between of the session. Prediction system helps staff to predict marks of the students monthly or weekly. Prediction makes easier for teachers to identify the fast learners who can score good marks in their final examination and slow learner who can score less marks or can get fail in the final examination.Prediction is based on their Unit test marks and the percentage of their attendance.

It gives a wide range of understudy data subtleties, scholastic related reports, school subtleties, course subtleties, educational plan, cluster subtleties, position subtleties and other asset related subtleties as well. It also facilitate us explore all the activities happening in the college, different reports and queries can be generated based on vast options related to students, batch, course, faculty, exams, semesters fora particular branch or the entire college.

II. LITERATURE SURVEY:-

All researchers have aimed to develop and provide a generalized solution to monitor the various works that are carried out by a College for automation of various tasks.There

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Smart Billboard System using Data Mining and IOT

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Abstract - *The methodology displays the implementation and design of a smart IoT billboard which is capable of showcasing multiple advertisements at a time that result in targeting an individual or group of individuals which are interested in buying certain type of products. The system is developed using a Raspberry Pi. Sales data from a particular department is acquired in the file format of '.csv'. The file is then processed by applying different algorithm and filters such as APRIORI and Market Basket Analysis, to analyze the behavior of an individual based on the previous buying patterns. Thus, helping in targeting of the people along with increasing the sales. We have also created a form of central system i.e. A website, for better understanding of ads and a User Interface where the product owner can manually post ads, if needed. The manually posted ads with go through a human filtration, then it will be approved or disapproved based on verification of the admin. So basically, the overall idea is to effectively target a specific number of customers which are likely to buy product based on the past data.*

Key Words: **Raspberry pi, Data Mining, IOT, Machine Learning, Smart Billboard, Apriori Algorithm, Market Basket Analysis.**

1. INTRODUCTION

Advertising has the ability to change the perspective of human mind, a best and effective advertisement can lead to rapid increase in product sales. Therefore, the advertisers are finding more effective ways to present the product in front of their customers. Companies want their products should be used on the larger pace. Thus, they are researching on how to increase the popularity of the products by advertisement. The process of finding and analyzing usage patterns in a large amount of data is what is called Data Mining.

The raw data is first cleaned and the information is extracted out of it by using certain data mining algorithms and filtering techniques. IoT and Data mining has proved a promising way to advertise and to target a particular customer, eventually increasing the sales and better understanding of the customers. In the present scenario, although we can find digital billboard in from of big malls, or on the streets but they are limited to showing a single ad at a time using manual operation. Our system will try to replace this existing manual operation along with elimination of the drawbacks. And this will be done using machine learning algorithm and wireless networks to display and wirelessly control the operation.

Our primary aim is to get/ grab attention of the customers who are likely to by the products based on the buying patterns. The patterns will resemble the buying habits of the customers and will also tell us the engagement of the customers around a particular type of products. There will be a central system (i.e. our website) to retarget the customers via Google adverts. At present, there is not any system which has implemented the combination of social and spatial data to provide promising results. According to our research some system does not consider user preferences while others do not take into account the location.

In this model, we proposed the idea of combining both to recommend and to provide the best offers to customers along with the offers if applicable.

1.1 Implemented System

Our system can be implemented at various crowded area where indulging huge amount of people of various type and taste which traverse all the time like markets station areas, highways, malls. Our system will grab their attention through digital marketing by arousing curiosity or interest among the customers. With the big market line-up and large business icons the start-ups also referred as small firms doesn't get much opportunities to showcase themselves the reasons is the small firms don't put much in advertisement hence limiting the growth, this problem will be solved as we are using user's past information.

The work presented in this project contributes to the Billboard management of the business and of any individual. This model and technologies utilized to solve issues and address restrictions in the current systems like the limitation to ads displaying time, offline billboard system with consume time as well as energy. The implemented system identifies the requirements of the users and exhibit the right advertisement at an ideal time to engage as many consumers as we can.

Smart Greenhouse System using IOT

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Abstract: **This work is primarily about changing the current agricultural process by using modern techniques and multiple sensors for better farming.it provides a small model of a smart greenhouse, which can help to the farmers to do their work in a farms automatically without the use of any manpower any manual work as compare to the traditional way. Greenhouse is an a closed structure and it will protects the particular plants and crops from the extreme weather conditions such as heavy wind and hailstorm, unwanted radiations, and insect and pest attacks which harm the plants. The supply of water to crops in this smart greenhouse is carried out automatically by drip watering system, which works according to the particular soil moisture requirement on the basis of that it required amount of water is provided to the plants. Based on data from given by soil moisture sensor, proper amount of minerals can be applied to the plant by using drip watering techniques.**

Index Terms: **Automatic Mode, Battery, Destination Point, Garbage Seperation and Evacuation, Manual Mode, Node MCU, Robotic Arm, Smart City, Servo Motors.**

• INTRODUCTION

Agriculture business in India is as yet completed in traditional way and falls behind in incorporating present day innovations. Around 55 percent level of Indian populace has been occupied with farming and partnered exercise, which establish just 15 percent of GDP so it turns out to be a lot significant for the partners required to come out of the traditional farming practices and modernize the farming utilizing innovation. The financial commitment of agribusiness to India Gross domestic product is relentlessly declining with the nationwide based financial development while enormous number of individuals keeps on working in rural part. Consequently, there is a prompt need to improve the framework, which can build the yield and produce solid natural nourishment. Farming in India is as yet did in customary way and lingers behind in coordinating present day innovations. By utilizing IoT, we can anticipate the expansion underway with ease by checking the effectiveness of the soil moisture, temperature, humidity in the particular environment, rain fall observing, checking the capacity limit of water tanks. The blend of conventional strategies with most recent advances technologies such as Internet of Things and Remote Sensor Networks can prompt farming modernization. The Wireless Sensor Network, which gathers the information from various types of sensors and send it to the primary server by using the wireless protocols. There are numerous different factors that decrease the effectiveness of the productivity of plants. The harvest yield is declining in view of erratic storm rainfalls, water shortage and inappropriate water use.

• METHODOLOGY

A. Irrigation system

For ideal utilization of water, we use trickle water system. It is an water system technique to spare water by permitting water to target the foundations of plant. Water acquired from all the sources like channel, water collecting, tube well and so on are not permitted to flood the field straight forwardly, rather it is first put away into an underground tank. Tank is furnished with a ultrasonic sensor which gauges the degree of water persistently and alarms the client with a sms at whatever point water level falls beneath the limit mark. The client at that point sends a sms to the gsm module, which recovers the sms and triggers the hand-off to switch on the cylinder well. Chip turns off the siphon once the underground tank is filled.

B. Air Temperature and Humidity Control

We place temperature and moistness sensor inside the keen nursery to quantify moistness and temperature. When temperature transcends a specific level, miniaturized scale controller will trigger transfer joined to the fogger, which will sprinkle modest water beads of size of micron which will stay suspended noticeable all around and cut the temperature down. In the event that the air dampness falls beneath the set worth, comparative system will be activated and the little water beads will keep up the family member dampness (RH). In the event that the relative moistness is at edge and further cooling is required, Peltier module is utilized which can be controlled by sun based boards and can direct the temperature by cooling or warming according to the necessities.

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Automobile Dealing Application using Blockchain

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Abstract: **Block chain is a growing list of records, called blocks, which are associated using cryptography. Each block contains a cryptographic hash of the foregoing block, a timestamp, and transaction data. This system describes the design of a structure and enactment of Block chain. Because of the popularity of the Internet, the integration services have moderately changed people daily life, such as e-commerce activities on transactions, transportation and so on. This system intends to provide security to users' credentials. It is essential for the stored records to be tamper-proof, Blockchain technology leads to greater transparency, enhanced safety, and easier traceability.**

Index Terms: Blockchain, hash, blocks, transaction, maintains.

I. Introduction

A blockchain is a distributed, public ledger of all cryptocurrencies. Regularly increasing as a completed block with the most recent transactions that are recorded and added to it in sequential order constantly growing as 'completed' blocks (the most recent transactions) are recorded and added to it in sequential order, it permits market contributor to keep track of digital currency transactions without central record keeping. Each node that is computer connected to the network gets a replica of the block chain, which is downloaded automatically. Initially evolved as the accounting method for the virtual currency that is bitcoin blockchains – which use what's known as distributed ledger technology (DLT) – are detectable in a variety of merchandising applications today. Nowadays, the technology is basically used to check the transactions that happen between the customer and dealer, within digital currencies even though it is possible to digitize the code and insert practically any document or information into the blockchain. Further then it generates a permanent ledger that cannot be altered, furthermore, the ledger's authenticity can be verified by the entire community using the blockchain instead of a single centralized consent.

Abbreviations and Acronyms

Distributed ledger technology (DLT)

II. Methodology

The proposed system is centralized and is controlled by an Admin.An admin is the one who keeps the records of the every user transaction details. The details includes user's login credentials, Account no., Amount, Password.The admin then stores encrypted transaction details of each customer into a block and maintains a blockchain of every transaction. Each block is assigned a Hash value. A hash is a string of numbers and letters, produced by hash functions. A hash function is a mathematical function that takes a variable number of characters and converts it into a string with a fixed number of characters. Even a small change in a string creates a completely new hash.

In blockchain each block of records has the hash value of previous block. So it becomes more secure. If in case any intruder tries to forge a particular block of records he will have to also forge the hash value of all previous blocks. As forging of hash value of every block becomes a tedious task which ultimately makes blockchain technology most secure and reliable.

System working is as follows:

Step1:-User visits the e-commerce website. He searches for product.
Step2:-Then he login into the system using username, password and add his selected product into the cart.
Step3:-Now, he buys the product by filling all required details.
Step4:-The money he transferred is encrypted using SHA encryption algorithm.
Step5:-These data are maintained by a block chain and stored at cloud.
Step6:-At the end, data is decrypted and delivered to receiver.

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Automatic Brain Tumour Detection

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***Abstract*: Now-a-days with the use of medical field, the use of technology has increased too much. Automatic detection of brain tumor is a very difficult task. Due to variations in type, size, location and shape of tumors it is difficult to detect accurate result of the tumour without the help of technology. In this paper, first the dataset of MRI scan image is taken as input and it is preprocessed using median filter. After preprocessing of images, the detection and extraction of region like tumour identification and segmentation of brain tumour is done. The segmentation which further introduces two-step procedure technique; i.e. the HCSD (Hierarchical centroid shape descriptor) and K-mean clustering. The methods incorporates with some noise removal technique, skull removal, thresholding which are some basic concepts of image processing of brain tumour. Using MATLAB Software detection and extraction of tumour from MRI scan images of the brain is done.**

Index Terms: Brain tumour, MRI Image, Segmentation, HCSD, K- means clustering, MATLAB.

I. INTRODUCTION

Medical field makes use of the technology to recover the patient's life with the accurate and quick treatment without any side effects. The primary purpose of this paper is to develop an automated system that can accurately classify a tumour from abnormal tissues. In this paper, we put forward a hybrid framework that uses HCSD (Hierarchical centroid shape descriptor) and K-means clustering followed by threshold filter to detect the tumour objects in MRI scan images of brain. In this hybrid framework, Pre-processing of MRI images in which it contains median filter, is the primary step in image analysis which perform image enhancement and noise removal techniques which are used to enhance the image quality, and also it consists of skull removal technique. Segmentation technique is used for locating brain tumour. The main concept is to separate the region of tumour objects from other items of an MRI image by using K means clustering and Threshold filter. HCSD (Hierarchical centroid shape descriptor) is used to select only those with specific shape. Imaging is necessary in the field of medical science to visualize the structures of the Human body. The experimental results also verify that the proposed framework helps pathologists distinguish exact type, size, location and shape of the tumour and accordingly, it generates the report of the patient by using this system. In future the work will be extended to categorize the tissue as either Normal or Abnormal Tissue using a classification technique called as Support Vector Machine. Then the volume of the extracted tumor region will be calculated to analyze and detect its size.

Abbreviations and Acronyms

Hierarchical centroid shape descriptor (HCSD), Magnetic Resonance Imaging (MRI).

II. METHODOLOGY

In this proposed system we are implementing the system for brain tumour detection from MRI images, the malignant or beginning of tumor region we will find by this system. The complete system includes preprocessing of MRI by using Median filtering, Skull removing, Clustering, Thresholding, Segmentation, Performance measures. Magnetic Resonance (MR) allows to localize a brain tumour tissue and a mass of abnormal cells in a slice. This process automation is useful for experts for post processing and extraction of region in interest like tumour identification and segmentation. It further introduces a novel technique that uses two-step procedure; the HCSD (Hierarchical centroid shape descriptor) and K-mean clustering.

In these, detection of Brain Tumour, we follow six main steps. The steps are as follows-

1. Filtering
2. Skull Removing
3. K-means Clustering
4. Thresholding
5. HCSD Segmentation
6. Performance Analysis

Algorithms used in this system are-

1. K-means Clustering
2. HCSD (Hierarchical centroid shape descriptor)

Secured Mobile Healthcare Social Network

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Abstract— The quick advancement of computerized information trade has constrained the information security to be of a lot of significant in information stockpiling and transmission. A lot of information is transmitted over a system, it is starter to verify a wide range of information before sending them. The issue with AES, most broadly utilized encryption is that it utilizes numerous multi variation conditions which are direct in nature. Hence it very well may be broken utilizing mathematical cryptanalysis. This gives a genuine risk as AES was considered to be unbreakable and along these lines it was utilized in numerous encryption frameworks. The present paper exhibits the plan and execution of a mixture based 128 piece key AES-DES calculations as a security

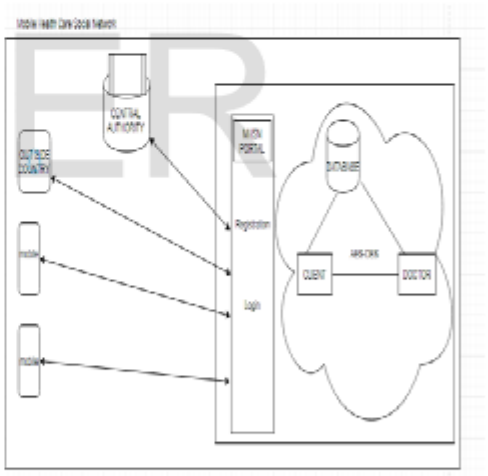
1 Introduction

Versatile human services is a creative mix of cell phones and portable correspondence advances, for it can give important wellbeing data.
It is getting increasingly more broadly to apply the rising distributed computing innovation into the fields of versatile medicinal services.
The medicinal services suppliers can peruse it from an end gadget or access it remotely utilizing a cell phone to give continuous therapeutic treatment.
In the meantime, individuals will in general share and disperse the medicinal services data through informal communities, since online networking is an augmentation of the human services proficient and quiet relationship.
Writing Review: Design can support publicists or associations to save money on equipment costs, deal with their substance, and to have the option to organize their impressions progressively, and the quantity of presentations can be extended inconclusively.

2 Implemented System

Allows patients to redistribute their wellbeing records to impart them to a gathering of specialists.
Permits specialists who fulfill the pre-characterized conditions in the authority. We give an effective profile coordinating instrument in MHSN dependent on IBE with uniformity test that causes patients to discover companions in a security saving way. Achieve adaptable approval on the scrambled wellbeing records with opposing the watchwords speculating assault.

2.1 Implemented System Architecture



Novel Technologies for Waste Management: A Literature Review

Ms. Prachi Sorte, Ms. Kiranjeet Kaur

Abstract- In the present situation, waste management has become a basic worry because of quick urbanization, social, monetary exercises and fast ascent in human population. The proportion of solid waste generated by the world is steadily increasing. The rise in environmental pollution caused by unmanaged solid waste management is terrifying and hence has become a matter of concern for the government. Improper handling of waste collection and inappropriate disposal of solid waste has resulted to become a source of water, land and air pollution. This ultimately creates risks and threats to human health and the environment. There is a need to implement suitable waste management techniques for a particular area and its waste situation. This paper highlights the literature review of current trending techniques for urban solid waste management. The study would upgrade the solid waste management reform; boost its management and efficiency to ensure the practical solutions for solid waste collection process, monitoring and management for green environment..

Index Terms— Waste management technologies, Solid waste management, municipal solid waste management (MSWM).

1 Introduction

Solid waste management is one of the basic and fundamental services provided by municipal authorities in the developing country to keep cities clean and hygienic. Current existing system is manual, slow, statistically invalid, inefficient and outdated. In the developing countries, waste management is a serious issue as rise in urbanization and economic development is leading to major growth in quantities of waste materials. The environment pollution due to unmanaged solid waste is drastic and hence has become a social issue. Several urban cities do not have ideal waste management techniques which have resulted in dumping of waste in open areas, burning or burying of waste causing serious environmental issues. If the existing situations of waste management are not handling correctly, it would lead to major environmental concers which can cause threats to living beings on earth. Improper mangement of waste can be a dangerous health hazard and can cause spread of deadly infectious diseases. Municipal solid waste production is rapidly increasing every year. From 1960, waste generation has increased tremendously by a factor of 2.6 [1]

Improper waste management can has resulted to in a cycle affecting everything around our atmosphere. If the generated waste is left unattended lying around, it can invite disease spreading insect like flies, mosquitoes, rats etc. resulting an unhygienic living environment. These infected insects then originate serious diseases like malaria, diarrhea, jaundice, plague etc. Animals which graze on such waste areas can spread on diseases via food chain. Also the waste not being collected can clog storm water run off leading to formation of sluggish water bodies that become breeding area for disease causing agents.

To overcome the increase in generation of waste we need to develop an effective, innovative and robust waste management system that can upgrade the present system as well as be time and cost efficient. This situation of waste management can be only addressed by importing the latest technologies in the existing system. In this paper we will review proposed models for the solid waste management.

Reduce, reuse, recycle, sorting, segregate, processing, and disposing are vital steps of waste management [2]. According to World Bank global review world cities generates about 1.3 billion tonnes of MSW annually, the amount is expected to reach 2.2 billion tonnes by the end of 2025 [2]. Solid waste management sector comes under the duty of local government, and reasonable portion of budget is allocated for this [2]. Poor collection of waste leads deterioration of environmental aesthetics, local flooding, land, air, and water pollution [2] [4]. All these issues leads to severe human health hazards.These can only be minimized by implementing effective techniques for waste management.

To overcome the severe consequences of poor waste mana gement and human health risks recently many new technologies have been introduced. These are more environmentall sound and efficient. While the choice and application of such technology depends upon different factors including country's economic condition, priorities, and types of waste generated [5].

The objective of the paper is to compile recently introduced technologies in the sector of MSWM. MSWM comprises a huge network of activities from storage to disposal. There is a need for developing countries to shift their focus on latest technologies for waste management. Then only environmental contamination and human health risks due to the poor waste management can be avoided. This paper briefly coveres those latest and innovative technologies of waste management from storage, collection, recycling, processing, energy recovery and final disposal.

2 Methodology

Strong waste administration basically endeavors the collec-tion of waste from the source and does unmistakable strides for its removal. This can be cultivated either by treating the waste or finally orchestrating it on a land-fill area. The essential procedures engaged with strong waste administration are: Collection of waste, Transportation of waste and Disposal or preparing of waste.

Collecting the generated waste from their source is an important step in solid waste management. Effective collection of solid waste and its segregation decides how well solid waste is managed. Usually collection of waste is done manually by the workers of the municipal cooperation.

Moving of gathered waste from source is a greater amount often finished with the help of bullock trucks, three-wheelers, tractors, trucks and so on. Numerous urban communities these days have actualized the utilization of water controlled vehicles (hydraulics driven vehicles) for the assort-

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Non Invasive E-Health Care Monitoring System using IOT

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Abstract- **The E-health monitoring system is one amongst the main developments within the field of life science. An automatic wireless health monitoring system is employed to live patient's temperature, pressure, pulse etc. which are accustomed evaluate the health condition of the patient. Providing the collected information to the doctor and making proper decision on the information collected also notifying the patient is that the challenging task within the IOT. During this project, an IoT based E-health care monitoring system is proposed which is Non-Invasive in nature . As the population ages, there is a greater need to develop clinical and personal diagnostic tools. As wait times for medical attention increases, the automation of non-invasively collecting patient vitals could significantly improve the efficiency of modern health care. The system components are presented and their accuracy is discussed, along with suggested enhancements.**

Index terms- **Non-invasive, Health monitoring, E-HealthCare, Pulse rate sensor, Temperature Sensor, Heartbeat Sensor, Arduino**

I.INTRODUCTION

Health monitoring is the major problem in today's world. Due to lack of proper health monitoring, patient suffer from serious health issues.[1] Health Monitoring is becoming critical and in-affordable. More than 50 percent death occurs in patients who are not continuously monitored. Heart attack, high blood pressure, high blood glucose are parameters affecting the health of people. There are lots of devices available now days to monitor the health of patient over internet. But the treatment is impaired, because the diagnosis is Invasive and Non-Continuous.

A. What is health monitoring system?

The patient health monitoring system is one of the major developments in the medical area. An automatic wireless health monitoring system is used to measure patient's body temperature and heartbeat by using embedded technology. The sensors used in the system helps to monitor the condition of the patient.

B. What is Non-Invasive Patient Health Monitoring System?

Non-Invasive Patient Health Monitoring System does not involve the introduction of instruments into the body. They are increasingly helping people to better monitor their health status both at an activity/fitness level for self-health tracking and at a medical level providing more data to clinicians with a potential for earlier diagnostic and guidance of treatment.

C. Why Non-Invasive?

Everyone has had an experience, most of them unpleasant, involving sharp objects and blood. The main advantage of non-invasive methods is the relief from pain and discomfort due to frequent finger pricks.

II RELATED WORK

Modern health care system introduces new technologies like wearable devices or cloud of things. It provides flexibility in terms of recording patients monitored data and send it remotely via IOT. For this connection, there is need of secure data transmission .To transmit the data with privacy is the Moto of this paper. The proposed system introduces security of health care and cloud of things .System works in two major parts viz. storage stage and data retrieving stage. In storage stage, data is stored, updated for future use. In data retrieving stage, retrieve data from cloud.

The cloud server can share with authenticated user as per request. A patient with wearable devices continually updates his record every 5 or 10 min. In emergency mode, it updates for every 1min.The

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Machine Learning: An Android based Application to Provide Diet

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ABSTRACT-*Good nutrition is important in the core aspects of the family, especially for people who work as a dietary supplement to good health, increasing their ability, growth and ability to continue. Thus, needing comprehensive assistance to provide them with solid nutrition may be the key to success. Just as people around the world want to see their weight, eat healthy, and avoid foods, a plan that says we can count calories and food in our daily diet is very helpful for our health. A calorie and diet plan are very beneficial for those who eat and maintain a daily meal with patients. Online Diet is an Android app with ML about human food. It almost acts like a dietitian like a true nutritionist. This method works similar to Dietitian. The person who understands their diet plan should provide the dietitian with other information, such as its somatotype, weight, height, and working hours. The system queries this information from the user and uses it to feed the user to determine. Therefore, the user is not used to visiting the meal plan, which saves time so that the user can access the defined meal plan with just one click. Keywords: Health, Food, Save Time*

1. INTRODUCTION

Android catering application that provides custom recipes to its customers. It works almost like a dietitian. This method works similar to Dietitian. A person who understands his diet plan should provide the dietician specific information, such as typing, weight, height, and hourly details. Similarly, this method also provides a diet plan that is not compatible with user-entered information. The system requests the user for all its information and uses it to provide the user with the food he or she decides. Therefore, the user does not need to visit any time-saving meal plan, so the user can find the specified meal plan with just one click. The program produces appropriate results because it accepts the information entered by the user and works based on some of the metrics already known to the supported application that the meal plan is made of and asks the user whether the user will accept the meal plan. If not approved, the program may offer another meal plan. This app not only provides the user with proper nutrition, but also gives the user all the exercise information. There is an information card to connect the entire fitness program with all the components. If a consumer wants to stay healthy and eat healthy, he / she can follow the program offered. The app also has a Health Facts card on home screen is the Health Information Card, which provides complete information and some amazing facts about our body parts and body parts. This exercise is sometimes an important part of the user's life if they want to take care of their health and body and follow the Diet Plan & Diet Plan offered by the user.

2. RELATED WORK

Bayes Papers and many other papers are connected to our health assistance project. We found some very interesting papers and, as is common in the book review section, we identified the main purpose of our project, and then started looking at the papers published in it to help us build the app. We went through a lot of IEEE; Gather information from them. In the current health care system, the physical and physical presence of the patient and physician is the first and most unpleasant necessity in every consultation. Also, the information is more likely to be misinterpreted and the source of errors. In addition, it can be difficult and time-consuming. With the increasing number of patients in health care facilities, the standard route of management is out of phase. As a result, a comprehensive health management system has become a demand for your time. Other systems are built specifically for the benefit of a disease such as Ob Bakam and Mongolism. While some are standard apps, some website projects are powered and some are mobile type. Our project is built on Android so that people can get a reliable UI and the app should be easy to use. Most apps are paid for use and some are free, we want to create our project for free. We started collecting information about the existing system and how it works, and working on standardized foods and calculating food based on personal information such as height, age, weight, gender. The web also helped us with tons of discovering some basics of ways to count whole foods and foods. A person's diet depends on what he or she does during the day. If he or she works hard, they will lose more calories compared to people who don't put in much effort, so we have to calculate that Kcal has supported the level of human activity. There should be a balanced component of

Android Application for Smart Shopping

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Abstract— We are basically developing an Android application that will be interfaced with the cart via a Bluetooth module. As the customer adds an item into the cart he will be required to scan the product first on the barcode scanner placed on the cart and the product will be added on the Android application as well. The customer can also remove the product from the cart by double scanning the product on the barcode scanner and the product will be removed from the Android application as well. Now if the customer removes the product from the Android application but forgets to remove it from the cart, a buzzer will go off. This buzzer is connected to ultrasonic sensors placed inside the cart and if the product is still in its range for 5 secs after being removed from the app, the buzzer will go off. This makes our project cost efficient, time saving and secure.

Index Terms— Android application, Bluetooth module, Barcode scanner, Buzzer, Ultrasonic sensors.

◆

1 Introduction

Now a days interest in shopping malls is widely increasing among people. In the present shopping malls, customers find various difficulties. Those difficulties are mentioned below. One third of major shoppers buy groceries on a budget. Most of the times, it is only at the end of purchase shoppers come to know that the overall purchase total is greater than their budget. Another major problem faced by users is that they have to wait in long queues for billing. Thus, the proposed system overcomes all these drawbacks faced by shoppers in shopping malls. In the first step of this project, a mobile application is developed to make shopping process easy. This system provides on spot scanning of the product and shows its price details on android application. This allows customers to compare the total price with the budget in the pocket before billing. Whenever a customer is done with his/her shopping and near to the billing counter, the data from the android application is going to transfer to the billing counter computer. By this way, it will save the time of the customers as well. We designed the system using the Arduino UNO Development Board. It provides complete access to functions of microcontroller or microprocessor like to program the controller, to use the input/output pins, to communicate. The system using Arduino UNO is less bulky and it can easily transfer from one place to another. It requires less power supply and we can easily improve the system, if required, because of its easy programming. Since, we designed this system using Arduino UNO. This system requires less cost to design. This system requires less power supply and it displays the total amount to the user so this system is user-friendly.

2 Related system

Viswanadha V, Pavan Kumar P, Chiranjeevi Reddy S proposed name system Smart Shopping Cart. The cart will consist of a Barcode reader, LCD screen and raspberry pie. When a person put any product in the cart it will scan the product and price and the brand of the product. The Smart Shopping cart helps the customers to shopping, billing and payment in less time in easy way. By simply scanning the barcode the customer can pay the bill. The problem of this system is that there is no sensor used for the recognizes the product inside or outside the cart.

Ashmeet Kaur, Avni Garg, Abhishek Verma, Akshay Bansal, Arvinder Sing planned a system name " ARDUINO Based Smart Cart" .This is based on the arduino based smart cart. This cart uses RFID technology and arduino. The RFID technology is used for shopping and payment, AVR for peripheral interfacing and record management. This particular system will help the malls to see rise in their purchase and sales along with the customer" s records. This system based on web-development technology.

Zeeshan Ali, Reena Sonkusar planned a system name " RFID based Smart Shopping" . The whole shopping cart is based on the RFID technology. The main goal of this technology is to reduce the long queue at the billing canter. The main focus is to provide assistance in everyday shopping in terms of reducing time. In the RFID based technology the RFID tags was used for maintain the entire database and billing process.

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Garbage Management System in Smart Cities using Automatic Robot

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Abstract: **The fourth generation defiance demands various advanced technologies and their interactions and incorporation in human world, which definitely has moved from the era of sci-fiction and research & development towards reality. Smart cities are now acquiring, utilizing and are fully charged with impending technologies; gradually they have adopted various forms of technology in multiple areas of economic and social life sector. Robots are designed, deployed and utilized for human comfort, as robot is an emerging field in the smart city infrastructure and in its application. A garbage collecting robot can obtain information about its surrounding environment, work for more time mitigate human effort and cost. A Robot can move as per instructed by user or in an automated way which is interaction between machines and humans.**

Keywords: **Automatic Mode, Battery, Garbage Separation and Evacuation, Manual Mode, Node MCU, Robotic Arm, Smart City, Servo Motors.**

I. INTRODUCTION

Development of Science and utilisation of Advanced Technologies have shown sound impact on the day to day routine of Smart cities , Smart cities equally intricate the use of Robots, as robotic field has gained recognition to ease human labour in Today's world . We use robot to fulfil our daily needs. This gives us a glimpse of articulation of various advanced technologies and domains altogether giving a new accord to the Infrastructure of Smart cities. The field of computer science and engineering concerned with creating robots that can move and react to sensory input. Robotics is one branch of artificial intelligence. Robots are automatic machines. Robots can perform mechanical and repetitive jobs faster and more accurately than humans can. Robot having its own brain fitted with computer logic so that it can do the work according to the algorithm designed into it. Robots play an important role in each & every field. They are used at industries, factories, offices, universities, societies and houses. The robots are just becoming as intelligent as human nowadays.

Various robotics parts are-

- Actuators
- Sensors
- Mechanical control devices like motors
- Microcontroller – Arduino

Robots have all the above-described parts. Actuators are for controlling a mechanism that ultimately controls the entire unit. Sensors are sensing devices in the robot that, transmit a signal, receive the signal, and accumulate various environment information that is given to microcontroller for deciding the operations of machines. Mechanical control devices are devices used to control movement of robots using motors. Microcontroller is brain of robot wherever program is written and sensors are connected as i/p and actuators as o/p. Arduino is a Microcontroller Board, which has embedded codes used for controlling mechanical control devices.

II. RELATED WORK

Sayli Mahadik, Ankita Chavan, Prathamesh Yerunkar presents Voice Operated Floor Cleaning Robot, a voice controlled robot which just clean the floor instead of collecting garbage on the floor, cleaning, collecting and separating is done by our system which reduced human intervention.

III. METHODOLOGY

Proposed System: System has implemented into two modes using android application:

1. Manual Mode
2. Autonomous Mode

Proposed Algorithm for garbage management system in smart cities using Automatic Robot in **MANUAL MODE**:

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INTEGRATED LAND-USE ZONING, USING TOPOGRAPHICAL DATA: OPTIMIZING VACANT SPACE FOR URBANIZATION AT AKOLE TALUKA, MAHARASHTRA, INDIA.

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ABSTRACT

Integrated urban land-use planning is becoming increasingly complex in India, as there is noticeable migration of rural population towards developed cities. Main reason behind it being, lack of education and employment opportunities, low levels of socio-economic development, as well as poor urban infrastructural base of rural areas. It is necessary to identify these areas and optimize its poorly developed or vacant spaces, to effectively manage the transformation of India's underdeveloped and rural areas into developed cities, resulting in development of the Country. This research attempts to present an integrative approach to the problem of land-use planning with the help of a conceptual model. The study examines, congested cities and identifies vacant spaces or underdeveloped areas adjoining them. Based on it, a village - Akole taluka in Ahmednagar district, adjoining two developed cities - Mumbai and Pune, of Maharashtra State, is analyzed for transformation and re-development purpose, through the use of topographic data. Finally, it is aimed at implementing new urbanism principles to the study area and produce a land-use model to maximize the quality of life of its people. Providing useful information for development of planning and design strategies for sustainable urbanization and enhancing quality of life is need of the hour. Therefore, key purpose of this research is to increase productiveness of citizen's habitat, by optimizing the use of vacant land. This is achieved by proposing an Urban

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STATISTICAL ANALYSIS OF WIND SPEED AND EVALUATION OF WIND POWER DENSITY FOR COLABA, MUMBAI

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ABSTRACT

The fuel energy resources around the globe are declining at a faster rate. The greenhouse gases emitted in the process of harnessing energy from the non-renewable resources such as coal, fossil-fuel and radioactive substances cause the global warming and there is a danger of climate change. All these factors compel the researchers to explore renewable sources for power generation. Wind is a renewable resource, which is available naturally and is practically inexhaustible. In this study, the hourly wind data collected between the years 2013 to 2015 is evaluated. The wind data at the height of 11 m was obtained from a wind station at the Indian Meteorological Department, Colaba (Mumbai, India). The highest monthly wind speed measured was 5.11 m/s and the yearly average was found to be 2.72 m/s. various distribution functions were statistically analyzed and it was observed that the Two-parameter Weibull distribution gives the best fit to the actual data. The mean wind power density was 73.013 W/m2. The maximum wind speeds can be observed between the months of June and September. The wind data analysis shows that if a domestic wind turbine is installed at this site, it will generate enough energy for power saving. This paper aims to promote the growth of small wind power plant in a developing country like India.

Keywords: Wind Speed, Wind Rose, Weibull parameters, Power density

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SITE SUITABILITY ANALYSIS FOR URBAN DEVELOPMENT USING GIS BASE MULTICRITERIA EVALUATION TECHNIQUE IN NAVI MUMBAI, MAHARASHTRA, INDIA

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ABSTRACT

During the planning of urban area economic and social factor are consider planning. Future growth of economic is depend on infra-structure development and utility. Finding appropriate site for development in hilly area facing the problem and difficulty for planning and implementation. Appropriate site analysis is providing sure chances for conducting various development, particularly in the rising and falling ground associated with the hills with helping of geographic information system and multicriteria evaluation technique to find appropriate site for development in Navi Mumbai, Maharashtra, India. In the process of site selection some thematic maps layers are prepared using ArcGIS software. Site selection Standards use for analysis such as slope, land use /land cover map, road proximity, digital elevation, flood map and rainfall map. Category weight is given according to importance and maps were convert into raster. Weights overlay is give all importance to each category then process to preparation suitable site selection map for development. Using all maps prepare suitable site selection map is created. It is essential for designing spatial analysis map for taking any decision relating to development in which remote sensing facilitate important role. This study is useful for planner, public and other agency for planning project and implementations in area.

Keywords: Site suitability, GIS, Multicriteria evaluation (MCE), Pairwise comparison matrix, Analytical hierarchy process

Monitoring Land Use/Cover Change in Navi Mumbai, Maharashtra, India Using Remote Sensing and Satellite Data.

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Abstract: Timely and precise development detection of Earth's surface features is essential for understanding relationships and interaction between human and natural phenomena to help for market better decision making. In this research main objective is that analysing the land use/ land cover changes inside the study area within the time frame, the effect on study construction area and comprehend the urban growth pattern along with its developing trend in Navi Mumbai, Maharashtra, India. Landsat satellite imageries of four different time duration i.e., land Sat images acquired by USGS Earth Explorer and also this images basis classified the images of three decades from 1988 to 2018. A combine classification method known as the hybrid classification is used for the analysis for this work ArcGIS and ERDAS software used. Images are classified in five different classes forest Land, agricultural land, constructed area, open land, water. In Navi-Mumbai change found from 1988 to 2018 change constructed area increased by 24.17 %, water body is reduced by 0.59%, forest reduce by 31.51%, agricultural land also reduces by 5.42%, open land is increasing 12.3%. The LULC result provides evidence of change relation between constructed area, agricultural open land, forest from last three decades.

Index Terms **- Remote Sensing, GIS, Land use/Land cover, Classification, Change Detection.**

I. Introduction

A substantial share of supervision natural source as well as its used to realize the end result regarding the man-stand action in the surrounding situation. The progress associated with the city may be the primary important cause for Land Use and Land Cover (LULC) changes the quick progress linked to the city. Urbanized societies are created new construction resident and society since large number people are living in the city in 19 and 20 centuries. Development of an area depends on the ratio of the village to city shifting of people for a better lifestyle and new job opportunity (Davis, 1955).

Implementation in area and development of any policy of regional current information on land use is playing a vital role. Collecting the information from satellite and remote sensing devices helps to manage the natural resource well. Land use could be an artefact of relations between a society's cultural background, state and its physical requirements and also the natural possible of land on its current use (Balak and krlarkse 1993). land use and cover result due to human activity and change in the surrounding environment and change in land use. Change the economic conditional, and less damage to the environment presented of a portion of land utilize main rational way. Decision taking needs basic knowledge and all information on modern and old land use and land cover data of that specific portion (Chaurasia et al., 1996).

The Significance of remote sensing provides a better a view regarding the geographical and functioning of toward city growth and land use is an alteration category (Batty M et al. 2001). In arising city modification and growth is not possible to control and it does not remove it permanent. Transformation of land use depends on changing needs human and demand of the of land for the specific purpose (Cohen, 2006).

Remote sensing (RS) is a suitable method for detect change in the area using satellite images use for calculation of the change in the extent. This method is quick, fast, less time consuming the correct method for detection change (J. S. Rawat et al. 2013). Land use and land change finding are the approaches compute the effect of creation and population modification in the economy. Satellite images prove to be broad view of the area due to this power continuous observation on earth surface is possible. Without satellite images, continuous observation is not possible by the regular method of map making (Madhavi Jain et al. 2016). Due to increasing human interference in the atmosphere, most scenes on the Earth's surface altered in some or different ways. Some sort of a large amount of land transformation is growing the load on the nearby environment and part of the nearby. Land change converts one area of class to other class due to the current requirement of land (Lillesand et al., 2003).

Revolution is the processed happening on earth place in between decades. In the process of monitoring, estimating, protecting and arrangement for earth resources and observed any noticeable change for this process change detection method is more beneficial. Land use change depends on development and need of use of change time base decade to decade (Gibson and Power, 2000). World's city population is predicted to extend by nearly 200 crores in the upcoming 30 years the rural population is estimated to reduce up to 330 crores in 2030. So, a large number of populations is probably to be found in near city part (Shahraki et al., 2011). For planning, the purpose is vital for all land use data calculation is helpful for the making policy. The planner can calculate change impact one

Assessment of Application of Value Engineering in the Construction Industry and its Comparative Study with Conventional Method

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Abstract: Nowadays the construction industry is seeking to adopt recently made and workable method instead of the traditional method which lowers the cost and time and also raise the level of excellence and productiveness at the construction. In this growing world, it is necessary to have control over cost. The construction industry has considered being the second largest industry and having a high cost that taking a lot of system time or resources. Apart from this, Construction Industry is facing difficulties related to the shortage of material, labours, ideas, creativity, other resources etc. In such a situation, sometimes the construction industry using the poor-quality material, inadequate methods, and equipment's to complete the project and this may affect the structure in failure and causing other issues too. Instead of this, brainstorming should be done. One of the prevalent and estimable techniques used in the construction is value engineering (VE). Value engineering lower's excess cost and also enhances the quality of the product. This paper explores to identify the various parameters of VE used in construction projects through case studies and to analyze these parameters on the basis of quality, feasibility, demand and cost. The study also compares the conventional method with the alternative value engineered parameters.

Keywords **- Value Engineering, Construction Industry, Material Replacement, Cost, Quality.**

I. INTRODUCTION

In today's competitive world it is very difficult to complete the project within the specified time and cost. So, it is very important to plan and schedule the project to achieve the goals. Construction industry faces many difficulties like time overrun, cost overrun, delay in the project, loss in the project, poor management etc. The reason of such problems is due to unavailability of materials, shortage of labours, conflicts in the project, unawareness of creativity, higher rates, and lack of knowledge about the new technique adoption [1]. Here, it is very crucial to overcoming these difficulties and this can be done by applying the new and feasible technique. The various technologies have been used to surmount the problems and one of the effective techniques used to exclude the unnecessary cost in a construction project is value engineering (VE). VE is a cost-cutting tool used to diminish the cost of the project without upsetting the quality and value of the product. Value engineering was developed at General Electric C. during World War II and is widely used in industry and government organization such as defence, transportation, construction and health care [2]. The VE group looks for the greatest blend of scheduling, environmental awareness, execution, buildability, maintainability, safety, and cost consciousness [2]. Value Engineering is performed in a wide range to improve the overall efficiency and net profit without mulcocharing the quality, the value of the product and the level of customer satisfaction. In the construction industry, the goal of the project is to ensure the project is completing on time, within the intended expenditure. Reduction in the cost of construction is a consistent aspiration for the construction industry.

Industries have been going out of their way to minimize costs to save their financial resources, meet their budgetary limitations & reallocate this money to fund other projects. VE aims in achieving the best use of alternative, inexpensive material without compromising strength and quality, priced-off design, mass reduction, labour reduction, a new way of manufacturing, new ideas of construction and better understanding to achieve the identical quality and efficiency at low cost [3].

Ravish and Vinoth (2016) carried a case study of a residential building located in thaliyur, Coimbatore. The overall cost for the construction of the building was 6, 61, 82,000.00 and duration was 11 months. The VE was applied to exposed walls, internal walls, windows, water tanks and sunshades, parking floor, terrace floor, plastering and painting and putty works and the feasible alternatives were adopted which saved in total 11,94,00.

Parthesban et al. (2017) stated that VE is a function-oriented technique that has proved to be an efficient management tool to obtain the enhanced design, cost of construction in various transportation fundaments. The paper presented a questionnaire survey to find out how effectively VE is adopted in construction and do the employees are aware of the concept of VE and its power. It was concluded that 20% of employees are not following a specific procedure for implementing VE and the remaining 80% following VE.

Rane (2016) stated that a cost-efficient solution is obtained by adopting the VE principle. Hence he presented a case study in which VE is applied to the shreenath enclave office complex and concluded that the value engineering method nobly aids the decision-making process to the designer, owner and the contractors. Successfully, this technique can be applied to a real construction project.

Patil and A.C.Attar presented an evaluation and selection techniques derived from value engineering principles for the door system. Sliding door alternative was selected as the best alternative, which saves cost up to 60-80% than the existing doors.

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A Real Time Healthcare Monitoring System Based on Open Source IoT and ANFIS

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***Abstract*— Integrating the healthcare monitoring devices with various emerging technologies like wireless sensor networks and Internet of Things (IoT), has become a keen area of interest worldwide. The proposed system aims to develop a wearable wireless body sensor device integrating adaptive neural intelligence in the field of healthcare monitoring using IoT. Wireless body sensor units are able to detect behaviour of human body parameters and transmit them using various data analysis and transmission techniques. Adaptive Neural Fuzzy Inference System (ANFIS) would allow the system to prioritize the collected physiological parameters from the sensor nodes by itself, making it a smart healthcare monitoring system. The proposed model has been developed as a prototype of a real-time wearable e-healthcare monitoring system by integrating ANFIS and an open source IoT. The model consists of sensors that collects vital data from patient's body and then transmits using Wi-Fi to the Cloud service which can be accessed by any IoT platform (ThingSpeak) on central HUB. At central HUB, fuzzy logic converts raw data into linguistic variables which is trained in ANFIS to give priority to patients depending on the status of patient. This system results in providing a reliable, accurate and real time data of patients continuously, and transmits the prioritized data during emergency.**

Keywords—Healthcare Monitoring; ANFIS; Internet of Things; wireless sensor network.

I. INTRODUCTION

Healthcare has become one of India's largest sectors. The healthcare sector is growing at a brisk pace due to its strengthening coverage and services. Technological innovations and simplicity in healthcare domain is essential for human life since healthcare is a critical science to deal with. The main objective of patient monitoring system is to diagnose the health conditions of the patient and create an alert for the irregularities in conditions. Healthcare monitoring system always has the scope of development for maintaining the ease in usage. Improvement in such systems is possible by using current advanced technologies in different patient monitoring machines and equipments. Wearable health monitoring is an emerging technology for monitoring of vital body parameters continuously. In this pursuit, there are many e-healthcare devices developed employing various ideas and techniques. Healthcare ATMs and air ambulance are being launched in India and other Nations to compete with the fast growing demand of healthcare services during emergencies. A very challenging task in this research area, that has attached a lot of interest, is identifying the communication protocol and network architecture [1]. The Internet of Things (IoT) enhances the healthcare industry in many different ways which includes patient care and monitoring, equipment supplies, drug delivery and management, remote surgeries and to connect doctor with patients. A simple and efficient patient monitoring system, that can continuously monitor the patient's parameters and provide accurate and reliable data for diagnosis to the doctor or staff in-charge can be achieved by using Wireless Sensor Network (WSN). Using WSN, patient can be monitored as well as tracked, in normal or in emergency conditions at hospital rooms, home or in Intensive Care Units (ICUs).

Healthcare systems with such approach can be particularly beneficial for physically challenged, elderly people, patient with critical situation who might not be able to seek the help in emergency. Rapid growth in population leads to rise in patients and causes shortage of staff resources. Thus healthcare sector requires new models for information handling and communication in order to guarantee quality-oriented health care of the elderly [2]. The problem of elderly people is, they can't frequently visit the doctor or they can't move easily from place to place [3]. The solution to this is integration of advanced technologies with optimum data analytics techniques in the field of healthcare monitoring which can be low cost, highly accurate and compact.

II. LITERATURE REVIEW

The medical devices sector is the smallest piece of India's healthcare pie according to [4]. However it is one of the fastest-growing sectors in the country like the health insurance marketplace. The industry has faced a number of regulatory challenges until now which has prevented its growth and development. According to [5] in the recent years the emergence of wireless sensor networks in the healthcare systems has significantly increased mainly in the areas like remote health monitoring, medical data access, and communication with the caregivers in emergency situations. Mabry et al. [6] proposed and tested an intelligent agent based system for patient monitoring and diagnostics which is capable of performing monitoring and diagnosis using fuzzy logic,

Analysing MPLS Performance by SDN

Snehal Patil and Mansi S. Subhedar

Abstract Nowadays, MPLS has become the first choice for enterprises to connect remote branch offices as it offers several benefits to packet forwarding. MPLS-VPN combines the features of both overlay and peer-to-peer VPNs thus offering the most robust connectivity. However, MPLS-TE faces the problem of creating backup path immediately when the best path goes down or gets congested. At some point of time in near future, all IP networks will be converted into programmable networks. During this transition, there should be some sort of mechanism which will couple the MPLS network to software-defined networking (SDN). This paper analyses the performance of SDN when coupled with MPLS. By using some of the core features of SDN, MPLS performance is enhanced for the tunnel creation. It has been found that coupling SDN with MPLS offers better performance in terms of latency, response time and bandwidth utilization.

1 Introduction

Enterprises use VPN technologies for increasing their working efficiencies by connecting different branch offices to each other. MPLS is fast, but it derives its operations from interior gateway protocol (IGP). Most of the Internet service providers (ISP) use OSPF for their intra-autonomous system (AS) operations. The convergence of MPLS and path selection totally depends on OSPF convergence and its reliability. Companies are always concerned about cost-effectiveness, downtime, security, traffic shaping, traffic aggregation and extensibility. Multi-protocol label switching is the most efficient forwarding mechanism used by many service providers currently in the world. It offers robust, fast and secure connectivity for VPNs. Basically,

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Pathological Brain Tumour Detection Using Ridgelet Transform and SVM

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Abstract. The identification, detection and classification of brain MRI images into abnormal and healthful is a main pre-clinical step for patients. Standard classification is tedious, valuable, inimitable, and time consuming. Using simple imaging techniques, it is very difficult to have vision about the normal and tumour cell due to the similarities between them. The proposed brain tumour detection method employs ridgelet transform and SVM to identify malignant and benign tumour. In this work, gray level co-occurrence matrix (GLCM) based texture analysis of discrete ridgelet transform coefficients is carried out. SVM classifier is trained using textural features and intensity based features. Principal component analysis (PCA) method is used to lessen the number of features used. SVM outputs the classified image and helps for automated detection. Experimental results demonstrated the efficacy with respect to precision, sensitivity, specificity and accuracy for tumour detection.

Keywords: MRI · Ridgelet transform · GLCM · SVM

1 Introduction

Brain tumour is common major factor for the increase in mortality among children and adults in the world. A brain tumour is abnormal and uncontrolled growth of cell in brain region leads or around the brain itself, or spread from cancers primarily located in other organs (metastatic tumours). Various types of brain tumours exist. Many brain tumours are low grade tumours (benign), and many are high grade tumours (malignant). Benign brain tumours have a well define shape with regular smooth margin. Most benign tumours have no encroachment in surrounding tissues. It does not comprise of cancer cells and may be either radiologically regulated or completely evacuated surgically and may not pursue again. The structure of malignant brain tumours has irregular margin and it contains cancer cells which can be healed with radiotherapy, targeted therapy or a combination of both, steroids and anti-seizure medication and are harmful to life. Craniopharyngiomas, astrocytoma and gliomas are the examples of low grade tumours. Most common example for high grade tumour is glioblastoma.

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STUDY OF MPPT TECHNIQUES FOR PERFORMANCE EVALUATION OF SOLAR ARRAY

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Abstract

The need for renewable energy sources is increasing because of the intense energy crisis in the world today. Solar energy is an essential untapped resource in a tropical country like India. The most important issue for the utilization and reach of solar PV systems is their low efficiency and high capital cost. In this paper, we extract maximum obtainable solar power from a PV module and use the energy for a DC application. This paper investigates in detail the concept of Maximum Power Point Tracking (MPPT) which remarkably increases the efficiency of the solar photovoltaic system. MPPT is used in PV systems to maximize the PV array output power.

Keywords: Maximum Power Point Tracking (MPPT), PV Systems, VMPP, IMPP, duty cycle, Irradiance.

I.INTRODUCTION

Using a solar panel or an array of panels without a controller that can perform Maximum Power Point Tracking (MPPT) will often result in wasted power, which ultimately results in the need to install more panels for the same power requirement. For smaller/cheaper devices that have the battery connected directly to the panel, this will also result in premature battery failure or capacity loss, due to the lack of a proper end-of-charge procedure and higher voltage. In the short term, not using an MPPT controller will result in a higher installation cost and, in time, the costs will escalate due to eventual equipment failure. Even with a proper charge controller, the prospect of having to pay 30-50% more up front for additional solar panels makes the MPPT controller very attractive. Maximum power point tracking control technique is used mainly to extract maximum capable power of the PV modules with respective solar irradiance and temperature at particular instant of time by Maximum Power Point Tracking Controller. A number of algorithms are developed to track the maximum power point efficiently .Several algorithms have been proposed in the literature on the maximum power point tracking (MPPT) problem, which have inspired numerous strategies to maximize photovoltaic systems efficiency under various irradiance conditions.

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Design of Compensators for Speed Control of DC Motor Using Frequency-Response Techniques

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Abstract: ***This paper proposes design of different compensators along with their output response for speed control of DC motor. This paper, aims to design compensators for speed control of DC motor with high competency and ease . The method used for designing can be used to improve the efficiency as per the application. This paper compares the effect of different compensators on system and variations in their parameters side by side. We have designed the compensator by using Bode Plot Techniques and MATLAB Programming, therefore it is easier to simulate any programme with the help of basic bode plot formulae and simple programming.***

Keywords: Bode Plot, Frequency Response, Compensator, Root Locus, Phase Margin..

I. INTRODUCTION

A DC motor is a set of rotary electrical machines which converts direct current electrical energy into mechanical energy. The most common types depends on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to repeatedly change the direction of current flow in part of the motor. The controller takes user input to control the speed and drives the motor at that speed regardless of load. The speed control is consummates in an operational amplifier circuit designed for proportional integral control. This produces quick, smooth motor response to the user input speed and keeps the speed regulated as the motor sees an increased load.

II. FREQUENCY RESPONSE TECHNIQUES

The steady-state sinusoidal output spectrum of the system in frequency domain is described by the phasor transfer function H(jφ). By studying the quantitative measure of output response , the transient-response performance can be ambiguously measured. The frequency domain specifications can be met in the Bode plot approach without a hitch.

Hence this approach of can be used to effortlessly design the open loop, and eventually we can find out the poles and zeroes of the closed loop conveniently. A review of transient-response characteristics is necessary to see whether the designed system is content with the requirements in the time domain also. If this review fails then, the designed compensator is studied and analyzed further until the requirements are met.

III. COMPENSATORS

- Information about the performance of the closed-loop system, obtained from the open-loop frequency response.
- Low frequency region indicates the steady-state behaviour.
- Medium frequency (around -1 in polar plot, around gain and phase crossover frequencies in Bode plots) indicates relative stability.
- High frequency region indicates complexity.
- Requirements on open-loop frequency response.
- The gain at low frequency should be large enough to give a high value for error constants.
- At medium frequencies the phase and gain margins should be large enough.
- At high frequencies, the gain should be attenuated as rapidly as possible to minimize noise effects.

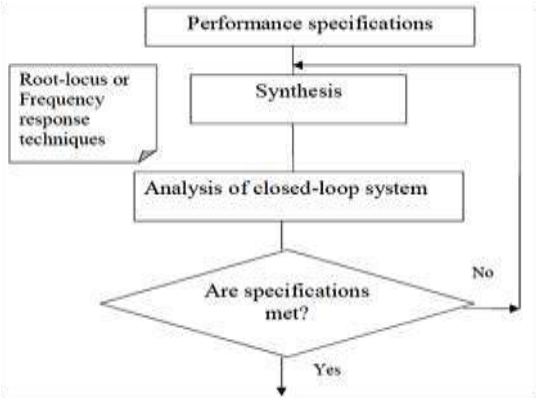

Fig. 1. Trial and Error Approach to Design

Types of Compensators:

Lead: improves the transient response.

Lag: improves the steady-state performance at the expense of slower settling time.

Lead-lag: combines both

IV. PROCEDURE TO DESIGN COMPENSATOR

1. Procedure for Design of Lead Compensator using Frequency Response Techniques:

Step 1: Determine the open loop gain K from the requirement of the error constant given

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Automation in Rationing System Using QR code

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Abstract: **"corruption has been around for a very long time and will remain in the future unless government can figure out effective ways to eradicate it" (mauro 1997). Ration Distribution means Distribution of Essential Commodities to a large number of people, hence it involves smuggling and corruption of goods. All this happen because of every job done is entered manually. The main aspect of this project is to avoid corruption and to Properly Distribute Goods. In this Paper, we propose a system in which customer will be given a QR code according to their information. The Customer will scan its QR code and will get the Rationing Goods. The Customer will be acknowledged after he/she has received the goods.**

Keywords: **Automation in rationing system, QR code, MD5.**

I. Introduction

Public Ration Distribution in India is one of the largest government's economic policy. Its main Aim is to provide food grains to the People at Affordable rates. Ration shops are available all over india to provide the food at Cheap Rates. The Public Distribution is managed by the Central Government of India but it has so many Limitations. Most of the Shopkeeper have fake Ration card with them and they Demand Ration Accordingly. In this way we are facing Corruption in the Current System which is a major problem that is affecting the Indian Economy.

Automation in Rationing System in this project is an Advanced System useful for an efficient way of ration Distribution. This System has been designed to minimize the Human Intervention in the Ration Distribution. Hence our System mostly focus on Implementing Automation in The Current Rationing System. The Consumers are classified into categories Yellow Ration card, Saffron (APL), White, Annapurna and are provided with a QR code on backend of a ration card which has the consumer details encoded in it using MD5 Encryption and Decryption Algorithm. The Shopkeeper Scans the QR code on the Customer Ration Card through a web application. Once the Customer code is Scanned, The Details of the Respective Customer appears on the Shopkeeper Application. The Shopkeeper than provide the Customer with What and Rice which. As an Acknowledgement the consumer is provided with list of items taken to the registered Mail Id.

II. System Design and Proposed Work

System Architecture of any Project gives the Complete Insight of the Project. It alludes to the high level structure of a Software and the Control of making such Logical and Systematic Structures of Framework. System Architecture of this project is given below.

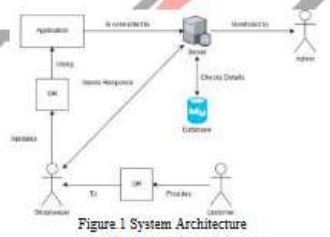

Figure 1 System Architecture

Admin

The Admin can be the Central Government or The State Government who monitors the activity of each and every shops. All the Operations such as adding a Shopkeeper as well as a Customer, Updating, Deleting etc., are controlled by the Admin. The Admin makes sure that the goods are being distributed among the Ration shops evenly.

Server

The Operations performed between the Shopkeeper and the Admin are Performed through the Server. The Database is checked by the Admin through the Server.

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IOT Based System Providing User Assistance for Signal Monitoring and Alerting

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Abstract: **Drivers often evince gratuitous "hurry up and wait" behaviour, leading to violation of traffic rules and causing accidents. The acceleration also causes a loss in energy as well as fuel if the vehicle stops completely. Also, roads are becoming overloaded with an increasing number of vehicles, this situation urges predominance on a signal with the relevance of user vehicle speed. So, we propose an application based system which allows the user to adjust the speed of the vehicle in accordance with signal moniterance. The system also advises the user about speed prediction and to take the decision to avoid tramping over the signal which could be disastrous. It provides the real-time density of traffic using sensors on a particular route. The system shows influences of IOT the Internet of Things refers to the ever-growing network of physical objects for internet connectivity and the communication that occurs between objects and other Internet-enabled devices and systems. However, the RF device will measure the distance of the user's vehicle from the signal. After an assessment of the speed, the user will be assisted with the desired safe speed.**

Keywords: **Optimal speed advisory, Signal manipulation, Traffic density**

I. INTRODUCTION

Traffic has the ability to irritate the best of us and it's getting worse. What if that can be changed with intelligent traffic signals? The use of internet has increased in the last few years and many different sectors in India have taken advantages of it. It has helped in speeding up many processes. Due to less complexity of use even a non-IT professional can use the internet to take advantage of these services. Many sectors use the internet for their operation so we are using the same for achieving our goal.

In India, many people are unaware of the traffic rules and the consequences that are causing because of violating the traffic rules. The default behaviour of the user is to accelerate whenever he reaches the signal and notice that the signal is about to turn green. But if the user stops completely at a red signal, both energy and the fuel are wasted due to unnecessary acceleration. So it gave rise to a solution that will monitor the traffic system and assist the user. Our system acknowledges the user with the estimated speed that will help the user to cross the signal without violating the signal. This will ultimately result in the reduction of the accidents and also avoid signal jumping as well as a traffic rules violation. Along with these, the user is availed with the real time of the signal and density on his way.

II. RELATED WORK

Yiran Zhao, Shen Li, Shaohan Hu, Lu Su, Shuochao Yao, Huajie Shao presents GreenDrive, a smartphone-based intelligent speed adaptation system that helps reduce fuel consumption and meet travel time requirements. Both realistic and large-scale SUMO simulations and small-scale real-world experiments show that our system is able to effectively learn traffic signal schedule, and over real-time optimal speed advice to drivers according to travel time requirements

III. METHODOLOGY

Proposed System: We propose an application based system which allows the user to adjust the speed of the vehicle in accordance with signal moniterance. The system also advises the user about speed prediction and to take the decision to avoid tramping over the signal which could be disastrous. It provides the real-time density of traffic using sensors on a particular route. The system shows influences of IOT the Internet of Things refers to the ever-growing network of physical objects for internet connectivity and the communication that occurs between objects and other Internet-enabled devices and systems. The system will consist of two modes, one is for normal user and other is for Government officials which can request the admin for signal manipulation.

https://ijsrem.com/volume-3-issue-4-april-2019/

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