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A NOVEL CONTROLLER FOR ENHANCING THE DYNAMIC PERFORMANCE OF A SINGLE-PHASE CASCADED H-BRIDGE MULTILEVELINVERTER

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Abstract: This research investigates the steady state and dynamic performance of a cascaded H-Bridge multilevel inverter (CHBMLI)with the use of closed loop controllers. For tackling a variety of challenges, a dual loop cascaded controller is appropriate for an MLI system. It is made up of an outer loop and an inner loop. The outer loop controller is Proportional-Integral (PI) controller which is used as a voltage controller and inner loop controller is Proportional (P) controller which is used as a current controller. With the aid of a voltage controller, one may achieve steady state voltage, or a constant output voltage, while a current controller can shorten the time required to attain steady state, or the transient/dynamic period. Both linear and nonlinear loads utilize the same controller. The closed loop CHB-MLI model in this study is created using the MATLAB/SIMULINK platform, and the controller parameters proportional gain (Kp) and integral gain are carefully chosen (Ki). For linear load, the steady state and dynamic performance of a CHB-MLI is derived by changing these two parameters in both loops. By employing the same controller and the same settings for the controller parameters as for linear load, steady state performance under non-linear load is examined.

Keywords: Non-linear Load, Linear Load,Dynamic Performance,Dual Loop Cascaded Controller, CHB-MLI.

1. Introduction

The invention of the CHB-MLIhas been widely using diverse applications. MLIs was commonly used for high but medium-voltage applications [1]. That important usage of MLIs is electric drives,footing, the HVDC, the Renewable Root Frameworks utilities interface including STATCOM [2, 3]. Although the MLIs have many gadgets and parts and involve exposure circuits, their accompanying highlight becomes essential and useful, a) Low THD in voltage production due to the waveform output chance.b) Lower concern dv/dt on gadgets, contributing to decreased issues of EMI/EMC.c) Lower drawback trading owing to the lower frequencies exchange.d) Low voltages of simple mode.

Customary areas of MLI include NPC, Flying Conductor (FC) and MLIs flying via H-Bridge (CHB) [2-3]. The need for strength parts (power switches, input DC condensers, and supplementary DC condensers) often rises throughout the customary MLIs, as that of the volume of level increases. For example, eight switches, four DC-Condensors, and six intensity diodes are needed for a traditional 5-level diode MLI [4]. For example. In all cases, 16 force switches as well as eight DC input condensers are required for both the conventional 9-level diode clipped MLI[5] just one huge addition to the number of intensity segments over the NPC five-level. The increased amount of strength switches provides the pre-condition and protection for driver circuits. The increasing amount of DC capacitors needs additional voltage change circuits that minimise the efficacy of both the structure and increase the weight, bulky and varied design of both the frame. Throughout the exhibition sense, the usage of an MLI with whatever numerical voltage levels may also be anticipated, as expected under the circumstances, is consistently appealing.

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DESIGN OF HYBRID ENERGY STORAGE SYSTEMS IN DC MICROGRID APPLICATIONS

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ABSTRACT:
Due to easy integration with renewable energy sources as well as proliferation of dc-compatible loads, dc micro grids are gaining popularity. Because of high penetration of renewable energy sources in dc micro grids, these micro grids are highly susceptible to fluctuations in power generation. This is harmful so long voltage stability is considered. To absorb these fluctuations within, a battery based energy storage system and hybrid energy storage system (HESS) consisting of battery and super capacitor (SC) are proposed. The contrasting characteristics of battery and super capacitors make them a perfect combination for HESS applications. The HESS is interfaced to dc micro grid using a double-input bidirectional converter. This bidirectional converter provides decoupled control of battery and super capacitor power. This thesis presents a converter modeling method for the double-input bidirectional converter. A controller was designed based on this for voltage regulation application for a dc micro grid. The operation of converter made it possible to use same controller for both HESS charging and discharging operation thus making it a unified controller. The designed controller was also able to reject disturbances from source side as well as load side while maintaining the voltage stability of dc micro grid. Operation of the converters and performance of designed controller in voltage stability were validated with simulation results for both battery alone storage system and hybrid energy storage systems.

Keywords: hybrid energy storage system; super capacitor; bidirectional converter; dc micro grid

I. Introduction.

As fossil fuels are diminishing therefore there is a demand for renewable energy sources has been increased in the power sector. Also due to the usage of fossil fuels, there is a lot of impact on the environment. To avoid this environmental pollution gradually we are switching towards renewable energy sources, while solar energy has greater demand amongst other renewable energy sources. In 1954 Photovoltaic technology is born in the United States when Daryl Chapin, Calvin Fuller, and Gerald Pearson develop the silicon photovoltaic (PV) cell at Bell Labs the first solar cell capable of converting enough of the sun's energy into power to run every day electrical equipment.

1.1 Supercapacitor

It stores the energy in the form of charge difference appearing on its positive and negative plates separated by some distance. Supercapacitors also called as double layer capacitors is similar to conventional capacitors except that it has high capacitance value due to its bigger plate area and less distance between plates as:

$$C = \varepsilon \frac{A}{d}$$

The supercapacitor is used mostly where fast charging and discharging processes are to be done and it provides high current pulse. Maxwell 16V, 500F supercapacitor as shown in Fig 1.1.

Fig 1.1 supercapacitor

1.2 hybrid energy storage systems (HESS)

Many energy storages are presently used but no device can provide rapid response for a long time- span. Two important terms are useful especially while designing hybrid energy storage systems, namely Energy Density and Power density. Fig 1.2 divides the energy storage systems in two parts, one having high energy density and other with high power density.

FIVE-LEVEL ONE-CAPACITOR BOOST MULTILEVEL INVERTER FOR GRID-CONNECTED PV SYSTEM

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ABSTRACT:
One of the important applications of power electronic converters is in low power Renewable Energy Generation Systems (REGS). In this paper a new application for single phase grid connected one capacitor boost multilevel inverter in REGS has been proposed Multi-level inverter configurations are a suitable candidate for medium and high power applications. This study presents a new one-capacitor-based five-level (2Vdc, V dc, 0, −V dc, − 2Vdc) boost multilevel inverter. The single-phase version of the proposed formation has one dc-source, eight switches and one capacitor. To provide boosting ability, the inverter is operating based on charge-pump theory, where the capacitor is charging in parallel and discharging in series connections to provide a higher output voltage. The proposed configuration requires simple control tasks, and for this purpose, level-shift pulse width modulation strategy, where the reference signal is compared with four carriers, is implemented to drive the switches and generates the required pulses pattern. The developed inverter has some distinct features like the usage of only one dc-source and one-capacitor, compact size, simple control requirements and boosting ability. The system is simulated with MATLAB/ Simulation is developed to verify the performance of the developed five-level configuration grid connected solar system.

I.INTRODUCTION

In renewable energy systems, dc to ac conversion is typically required to generate the ac output with certain amplitude, frequency and small harmonic profile. Pulse width modulation (PWM) inverters with two-level or multilevel configurations are the mainstream ac/dc power electronic interfaces. They enable controlled amplitude, frequency and harmonics of the output voltage. Multilevel inverter configurations generate the ac output with reduced harmonic components. Hence, multilevel inverter topologies were covered extensively in the literature due to their merits such as small filter size and improved output waveform [1– 9]. In a multilevel inverter, multiple dc levels are used to synthesise a staircase waveform utilising power semiconductors. In comparison with two-level conventional inverters, multilevel inverters have improved harmonic profile and reduced semiconductor voltage stresses [10]. The power quality of multilevel inverter improves with the increase in levels. On the opposite side, increasing the levels leads to a large number of power semiconductors and associated driving circuitries. Hence, system cost and complexity are high. This affects system reliability and efficiency [10, 11]. Various multilevel inverter configurations were developed. Those configurations include neutral point clamped (NPC), cascaded H-bridge (CHB), flying capacitor (FC) and modular multilevel converters [12–15]. Those multilevel schemes can be configured to generate 3, 5, 7, or n-level output voltage [16]. NPC inverter was introduced by Akira Nabae and Akagi [17], as a three-level diode clamped form for motor drive. Stability and balancing of the dc-capacitors are a big concern of this topology, although it has only one dc-source. As the dc-capacitors are fed by the dc-source, capacitor voltage and current are controlled to keep the stability and balance of the two stacks [18]. Instead of clamping diode, Stillwell and Pilawa-Podgurski [19] used a FC to clamp the voltage of one capacitor voltage-level, which is a FC multilevel converter. FC multilevel inverter owns some distinct feature over the NPC counterpart, which is the phase redundancies. Such feature gives the FC flexibility in charging or discharging, and overcome voltage unbalance or faults.

Moreover, redundancy improves voltage stresses across the power switches and harmonic profile. Meanwhile FC multilevel inverter suffers from different drawbacks such as control complexity to manoeuvre voltage of all capacitors and poor switching efficiency [15, 18]. Another formation of multilevel inverter is the CHB multilevel converter, which is built by series-connected h-bridge inverters. Each bridge has its dc-source. The modularity of this formation gives it an obvious advantage over neutral point and FC configurations, it gives the inverter high flexibility in fault tolerance and low power level operation after cell failure [20]. Scalable technology for modular multilevel inverter is another lower

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DESIGN AND SIMULATION OF PV POWER CONVERTER IN RELECTANCE BASED WIND POWER GENERATION

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ABSTRACT:

With the fast increase of wind energy generation current-day generation worldwide, the effect of intermittent in addition to ever-changing dispositions of wind energy era at the microgrid and furthermore hundreds is carry in a super deal of hobby in addition to its growing infiltration. Aimed at resolving the problem that simplest wind price model is idea about inside the technology plan of conventional small-scale wind power generation programs, this paper offers a collection of manage structures for the switched reluctance generator based totally absolutely small-scale wind electricity era tool with the covered electricity garage gadget. Taking into interest the possibility of off-grid way of small wind power era systems within the regions in which the grid is inclined or perhaps uncovered, the encouraged control plan will increase the eye of colorful changes in masses and additionally strength garage region gadget. To decorate the software program application effectiveness of small-scale wind energy technology, a step control plan is commonly advocated incorporating maximum splendid strength monitoring managed with power equilibrium control. The -diploma inverter is advanced to offer air conditioner 110V/60Hz effects via voltage closed-loop control in growth circuit of the front phase further to PI manage in the inverter circuit of the second one section. Ultimately, the overall performance of the encouraged control plans is confirmed experimentally.

Keywords: Micro grid, wind power generation, small scale.

1. INTRODUCTION

Since overdue, sustainable strength has created significantly more fear all at a few levels in the international thru way of the stress of contamination in addition to restricted asset saves. As one of the to be had countless possessions, wind energy is at some stage in positioned for the minimum rate and bountiful shops. Wind energy age, one of the very first-rate ways of the usage of wind power, is reeling in extensively even extra interest. Generally, the shape of wind power age framework is segmented via its pressure grade, wind electricity packages underneath 100kW are described as restrained range wind strength frameworks, the pressure scope of medium-scale wind electricity age framework is between a hundred-1000kW, and the stress of large variety wind electricity age framework is through manner of and big more than 1000kW [3] Already, there are numerous mature investigations on medium-and massive quantity wind energy age, and that they've truly been typically made use of in organization fields. Be that as it could, because of the restrict of improvement trouble and project further to renovation charge, medium-and huge scope wind strength age shape isn't always one of the maximum ideal preference in a few wind strength application conditions. Contrasted and moreover huge scope wind power age framework, minimal extent wind energy framework is significantly broadly diagnosed in an extended manner off areas because of the advantages of little period, simple style and also simple controlling. Particularly in inadequately populated areas in which strength isn't to be had, a restrained scale wind electricity framework may be a smart method of strain deliver. Mostly, because of the merciless walking troubles in such regions, the stableness in addition to financial scenario of the engine in the minimal scale wind energy form must truly be esteemed. All in all, the model to non-vital failing and also price of confined scope wind strength frameworks should definitely be the focus of evaluation. Different shape of turbines discovers software in limited variety wind electricity structures: DC generators, prolonged-lasting magnet synchronised generators (PMSG) [9], and silicon rectifier self-invigorated coordinated mills (SRSEG). Initially section, DC engines are for the maximum issue made use of for the benefit of electricity stockpiling, however they require hundreds of protection. PMSGs are diagnosed with excessive effectiveness, yet there are more than one troubles at the same time as it's miles positioned at the confined variety wind strength age framework with terrible strolling troubles. From one factor of view, the vitally lovable place of PMSG is given with the useful resource of the noticeably resilient magnet, which cannot be modified, and furthermore its terminal voltage will in fact adjust with the distinction within the load scenario. As a give up result, the voltage fashionable execution of PMSG is horrible underneath primary walking situations, it's miles tough to well known boost up in addition to feeble visitor enchantment therefore an surprising adjustment in wind charge, further to the engine voltage will in reality growth strongly or even development the safety in addition to lantern the engine. Furthermore, the variant to non-crucial failure of PMSG isn't tremendous, which shows that the steadfast splendid of the minimum range wind electricity framework selecting PMSG in away regions cannot meet the not unusual-experience conditions and additionally the fee of the framework can be more for

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GRID-BASED VARIABLE SPEED WIND ENERGY CONVERSION SYSTEM POWER QUALITY IMPROVEMENT

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Abstract— The analysis, design, and management of a variable speed wind energy conversion system (WECS) with a grid-interfaced doubly fed induction generator (DFIG) for power smoothening with maximum power point tracking (MPPT) capabilities are the topics of this study. The rotor position computation technique is used by this DFIG. For supplying regulated electricity to the grid, the grid-side converter's control algorithm is adjusted. To achieve MPPT and unity power factor functioning at the stator terminals, the rotor-side converter is regulated. In order to be suitable for modelling all different induction generator configurations, the entire system has been modelled and simulated in the MATLAB Simulink environment.

I. INTRODUCTION

The output of Earth's fossil fuels, such as coal, gas, and oil, is finite, and it is anticipated that they will be consumed past their peak in the coming decades. As a result, energy costs might continue to grow. Future energy demands can be satisfied by increasing the contribution of renewable energy sources. Because there are no harmful emissions to the environment from renewable sources, they are climate-friendly [1]. Because to developments in power electronics, wind energy is one of the least expensive renewable energy options [2]. Because of their simplicity and low cost, fixed speed wind energy conversion systems (wecss) using squirrel cage induction machines are frequently used. One can plainly see from the wind turbine characteristics that for various wind speeds, the machine should run at various rotor speeds to achieve maximum output. Fixed speed induction generators (FSIG) are less effective since they operate at the same speed regardless of the wind speed [3]. These fixed speed generators draw a significant amount of lagging reactive power because the stator is directly connected to the grid. In order to significantly increase energy output and achieve unity power factor, variable speed induction generators are now used to run at desired speed using power electronic converters [4]. Due to the reduction in the size of the power converters and the converter losses, the double fed induction generator (DFIG) is the most popular variable speed WECS architecture [5]–[7]. Due to its energy yield compared to cost, DFIG with a single-stage gearbox appears to be the most intriguing option [7]. Both the active and reactive powers of DFIG have been successfully controlled using vector control techniques [8], [9]. The fluctuation in power produced by the wind turbine is particularly considerable due to the intermittent nature of wind. When wind energy penetration in the grid rises, this issue becomes more severe. There have been numerous attempts to lessen the unstable impact of wind power generation on the grid [10]–[15]. The fluctuating wind power is smoothed using a variety of methods, including Pref versus m and tip speed ratio (TSR) control [10]. But because it is not functioning at MPPT in this instance, the power yield is decreased. By incorporating energy storage into the WECS, this problem can be solved. For the purpose of enhancing power quality, the performance analysis of various hybrid energy storage systems connected to wind turbines is examined [11]. For various time scales, the operational suitability of various energy storage technologies is compared. [12] also looks into the proper sizing of storage and energy capacity required for a given power rating. Super capacitors are a type of short-term energy storage device that is used to smooth out fast wind-induced power variations [13], [14]. In [15], Li-ion capacitors are suggested as a viable remedy for power fluctuation filtering at the range of tens of seconds. Integrating a flywheel with a DFIG allows for the smoothing of power fluctuations and voltage fluctuations. As a result, the penetration of wind energy in the grid rises. For a time scale of 20 minutes, flywheel storage is typically preferred, though [10].

The grid interfaced DFIG based WECS is the power smoothing solution proposed in this paper. The rotor position is estimated using the rotor position computation algorithm (RPCA). The work's control of the grid side converter is new (GSC). The control algorithm for supplying regulated electricity to the grid has thus been demonstrated by the authors in a transparent manner. The second crucial element of DFIG-based WECS for power smoothening is the use of BESS. By contrasting the traditional and suggested DFIGs, it is possible to see how the powers change as wind speeds increase. The system's functionality for controlling the power of DFIG even with changeable

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CRITICAL WHITENESS STUDIES AND TEACHING NINETEENTH-CENTURY AMERICAN LITERATURE

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ABSTRACT

This article argues for implementing a Critical Whiteness studies approach to canonical White literature. After providing an overview of Critical Whiteness studies, I discuss examples from teaching nineteenth-century American literature where Critical Whiteness approaches are fruitful. Alongside widening the selection of what we teach in English departments, incorporating Critical Whiteness studies as part of decolonizing the curriculum reorients how we teach canonical White literature that remains on our syllabi and supports students to recognize continuing discourses of White supremacy today.

INTRODUCTION

In her recent essay on teaching 'casual racism' in Victorian literature, Carolyn Betensky demarcates texts that outwardly discuss race, or where race and racism is central to plot, and texts which 'we don't especially associate with racism but in which racist language or figuration occurs, nonetheless, in passing'.1 Urging her readers to talk with their students about racist episodes that are so casual—unremarkable, transient, ignored within texts—she suggests that 'calling out and recognizing banal incidents ... can provide a crucial entry point for students to reflect on the myriad continuing effects of racism and privilege in their own world that generally go unmentioned in polite public discourse' (p. 740). Betensky is right to think about how we can attend to the everyday racism that permeates nineteenth-century literature, including works today considered canonical and a marker of cultural capital in English departments and the wider reading public.

In this short piece, I make a case for extending this attention towards nineteenth-century literature's everyday construction of Whiteness.2 It is in the nineteenth century that Whiteness becomes formalized as a racial identity through the convergence of race science, settler colonialism, slavery, and imperialism—all of which cement racial hierarchies.3 In concert with expanding what we teach in English departments, teaching canonical texts through the lens of Critical Whiteness studies alters how we teach White-authored works. As Priyamvada Gopal recently argued, decolonization of the university is not achievable without significant social and economic restructuring, but universities can commit to the 'anticolonial' practice of 'recognising the centrality of European colonialism in shaping the globe as we experience it today'.4 A Critical Whiteness studies framework—as I illustrate through a discussion of nineteenth-century American literature—balances the demands of teaching canonical literature with recognizing that earlier constructions of Whiteness articulate both the racial politics of their period and how they continue in the language surrounding and enabling White supremacy today.

Critical Whiteness studies contains three meanings of 'critical': one, drawing attention to Whiteness as a site of critique; two, criticizing structures of Whiteness in an anti-racist framework; and three, the critical or urgent importance in understanding how Whiteness operates and dominates today. Although Critical Whiteness studies did not become a field until the 1990s, its initial aim—put forward in earlier work by Black writers such as W. E. B.

DuBois, James Baldwin, Audre Lorde, and bell hooks—has been to invert the expectation that Whiteness is the invisible yet default position in society against which all other groups stand out, particularly Black people.5 But Whiteness is not

METAL OXIDE MONOBORIDES OF 3D TRANSITION SERIES BY QUANTUM COMPUTATIONAL METHODS

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ABSTRACT

In the present study the basic set B3LYP/ LanL2Dz level used and investigated 3d transition metal monoborides utilizing the density functional approach. The dimers, the lowest spin state, bond length, vibrational frequencies are calculated. These dimers' cation and anion are also investigated. It was discovered that the ionization potential of these dimers is substantially higher than their electron affinities. The range of electron affinities for 3d transition metal monocarbides is the broadest and the narrowest for 3d transition metal mononitrides. Ionization potential ranges are greatest for 3d transition metal monoborides and narrowest for 3d transition metal monocarbides as it was studied by earlier researchers. In this article monoborides spin multiplicity, vibrational frequencies and their bond length studied.

Key words: Oxides, Monoborides, Mullikan, Gaussian Software.

INTRODUCTION

Molecules which form the small clusters or nanoparticles exhibit proper-ties that are often quite different from those in the bulk phase. For example, small metal clusters exhibit novel electronic, magnetic, optical, and chemical properties.[1-17] The geometric and electrical structures of transition metal containing clusters are critical for understanding their growth behavior as well as the associated catalytic, magnetic, thermal, and optical capabilities. Transition metal nanoparticles are gaining popularity in technological applications. A lot of theoretical and experimental.[18-72] Works on transition metal containing clusters have been carried out in the past several years for their importance in many fields, such as heterogeneous catalysis, nanotechnology, microelectronics, materials sciences, optoelectronics, etc. Clusters containing B, atoms have received considerable attention from various aspects. One area of interest is their potential importance in interstellar space. Until now, several Borides containing molecules have been detected in interstellar medium. Small clustershave been the subject of intense investigation in recent years.

Clusters containing transition metals are also of significant interest, because of their potential applications in developing new nanodevices.[73-77] Theoretical studies on molecules

RESOLVABILITY OF THE STARPHENE STRUCTURE AND APPLICATIONS IN ELECTRONICS

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ABSTRACT:

Polycyclic aromatic hydrocarbons, or starphenes, are composed of three distinct acene-arm variants. The fundamental building blocks for the downsizing of various electronic devices, particularly organic ones, are starphenes. It was also a key component of several logical gates. Every electrical circuit, structure, or network in network topology can be represented as a graph with line segments (branches) acting as edges and primary nodes (or simply nodes) alternating to vertices. Resolvability parameters of a graph are a relatively recent specialized field in which the unique location of each primary node is obtained by forming the network as a whole. This article investigates the metric, edge metric dimension, and generalizations as resolvability characteristics of starphene structure. We demonstrated the consistent cardinalities of all the parameters examined for the starphene graph. Transforming the entire structure into a fresh shape provided by resolvability parameters facilitates understanding and handling of structures.

1. Introduction

The graphical representation of electric circuits known as network topology. Complex and complicated electric circuits or networks are relatively not easy to work on and study in their original forms, to make them easy and understandable, network topology is used. Any electric circuit or network can be transformed or shaped into its equivalent graph, in this procedure of terraforming an electric network into graph, open circuits took places of current sources and short circuits are came up in place of the passive elements and voltage sources. Open circuits usually denoted by nodes (or principal nodes) in network topology and vertices in pure mathematical graph theory, whereas short circuits are called as line segments (or branches) in network topology and edges in graph theory conceptualization. The formal definition of graphical representation of an electric circuit or network is defined as:

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Peer review under responsibility of Ain Shams University. Definition 1.1 [25]. ''Let @ðVð Þ@ ; Eð Þ@ Þ is an electric circuit (network) with Vð Þ@ is called as set of principal nodes (vertex set) and Eð Þ@ is the set of branches (edge set). The total number of principal nodes in an electric network are jVð Þ@ j and the count of branches usually denoted as jEð Þ@ j, basically these are order and size of a equivalent graph of an electric network."

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TRAVELLING WAVES IN HYBRID CHEMOTAXIS MODELS

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ABSTRACT

Hybrid models of chemotaxis combine agent-based models of cells with partial differential equation models of extracellular chemical signals. In this paper, travelling wave properties of hybrid models of bacterial chemotaxis are investigated. Bacteria are modelled using an agent-based (individualbased) approach with internal dynamics describing signal transduction. In addition to the chemotactic behaviour of the bacteria, the individual-based model also includes cell proliferation and death. Cells consume the extracellular nutrient field (chemoattractant) which is modelled using a partial differential equation. Mesoscopic and macroscopic equations representing the behaviour of the hybrid model are derived and the existence of travelling wave solutions for these models is established. It is shown that cell proliferation is necessary for the existence of non-transient (stationary) travelling waves in hybrid models. Additionally, a numerical comparison between the wave speeds of the continuum models and the hybrid models shows good agreement in the case of weak chemotaxis and qualitative agreement for the strong chemotaxis case. In the case of slow cell adaptation, we detect oscillating behaviour of the wave, which cannot be explained by mean-field approximations.

Keywords hybrid model · travelling wave · bacterial chemotaxis

1 INTRODUCTION

The wavelike spread of cell populations plays a fundamental role in many biological processes, including development [24], wound healing [38] and tumour invasion [16]. Bacterial populations show similar phenomena, with the pioneering studies of Adler [1] confirming the capacity of an E. coli population to form travelling bands via chemotaxis to extracellular signals. Mathematically, the extent to which chemotaxis can generate and sustain stationary travelling bands has motivated a number of studies, including the Keller-Segel model of Adler's experiments which is written in the form of coupled partial differential equations (PDEs) [20]. This early model necessitated a biologically unrealistic singularity in the chemotactic sensitivity to generate stationary travelling waves: a requirement that allows bacteria behind the wave to acquire infinite speeds and to avoid "dropping-out", an effect that leads to gradual dispersal of the band [40, 15].

This singularity requirement can be circumvented by incorporating other processes. The well known Fisher's equation [14] demonstrates travelling waves in systems coupling diffusion with logistic growth terms [14]. Parabolic chemotaxis models with non-singular sensitivities but incorporating either logistic [22, 23, 30] or non-logistic [21, 36] growth terms also admit travelling wave solutions. Other studies have shown that introduction of more complex nutrient terms can give rise to travelling waves, even when growth is absent [34, 35]. An experimental system which also included two chemicals – a chemoattractant and a nutrient source – was presented in [6, 7], with stationary or transient travelling waves obtained according to t he formulation of the model [5, 40]. Travelling waves in chemotaxis models have also been recently studied in [26, 25]; we also note the articles [19] and [37] for a review and analysis of travelling waves in PDE-based models. A comparison between mesoscopic (hyperbolic) and macroscopic (parabolic) PDEs has been presented in [27].

Relatively little exploration has been conducted into travelling wave formation for chemotactic models extending beyond PDE systems, in particular those introducing terms to account for the inherent noise of biological systems. One exception is the study of [9], in which a multiplicative noise term was introduced into the Keller-Segel model and the existence of travelling waves has been demonstrated within this setting. Hybrid models, in which an individualbased model for bacterial behaviour is coupled to a continuum description of extracellular signals, naturally introduce stochastic effects and will be the focus of the present paper. Such a hybrid model was formulated in [15] where it was shown that under finite cell speeds only transient travelling waves formed, even with singular chemotactic sensitivity. The individual-based model was formulated in terms of the velocity-jump model with internal dynamics [12, 13, 41] and, in this paper, we extend the model in [15] to incorporate proliferation and

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ANALYSIS OF THE THERMAL EFFECTS OF DIFFERENT GEOMETRIES AND MATERIALS FOR ENGINE CYLINDER FINS

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ABSTRACT

The engine's combustion chamber is a crucial component that must withstand extreme temperatures conditions and thermal strains. The fins on the cylinder's surface improve the pace at which heat may be transferred in order to cool the chamber.Fins are projections on an item's exterior that speed up the pace at which heat is transferred to or from the object by convection. Increasing the body's surface area does this, which in turn raises the heat transmission rate. The high thermal conductivity of engine fins allows for rapid heat transfer from the body to the surrounding fluid, regardless of whether the surrounding fluid is heating or cooling the fin.

We know that increasing the surface area increases the intensity scattering rate, therefore designing such a massive complicated motor poses significant challenges. The cooling blades are used primarily for cooling the motor chamber with air. Changing the fin's shape to examine its effect on heat dissipation is the primary objective of this study.Following this, models are constructed by experimenting with different geometries, such those of circles, triangles, rectangles, and extended fins. CATIA V5 R20 is the software for the visuals. To do the analysis, we use ANSYS 16.0 or R22. The materials used to put together the counterweight body are typically Aluminium 6061 and Cast Iron.After settling on the material, the intensity and speed of the framework may be increased by experimenting with different mathematical parameters like as the blade's cross-sectional area, boundary, length, thickness, etc.

Engine, Fins, Convection, Geometry, Material, Heat Dissipation are some examples of keywords.

I INTRODUCTION

In the event of Gas-powered motors, ignition of air and fuel happens inside the motor chamber and hot gases are created. The temperature of gases will be around 800 to 1500°C. This is an exceptionally high temperature and may result into consuming of oil film between the moving parts and may result into seizing or welding of something very similar. Thus, this temperature should be decreased to around 150-200°C at which the motor will work most productively. A lot cooling is likewise not attractive since it diminishes the warm proficiency. Thus, the object of cooling framework is to keep the motor running at its most productive working temperature. It is to be noticed that the motor is very wasteful when it is cold and consequently the cooling framework is planned so that it forestalls cooling when the motor is heating up and work it achieves most extreme proficient working temperature, then it begins cooling. It is likewise to be noticed that: 20-25% of complete intensity created is utilized for delivering brake power (valuable work).

1. Cooling framework is intended to eliminate 30-35% of complete intensity
2. Remaining intensity is moved by exhaust gases.

The point of this undertaking is to figure out the impact of balance calculation and blade pitch on cooling of the motor. As the petroleum product holds are draining step by step, the spiralling fuel cost is pushing the innovation towards it cut off to give motors which are profoundly proficient and creates high unambiguous power. Air cooled motors are slowly transitioned away from and are being supplanted by water cooled motors which are undeniably more proficient in disseminating heat, yet in instances of bikes and certain different applications, air cooled motors are the main suitable choice because of space requirements. The intensity which is produced during ignition in a gas-powered motor ought to be kept up with at the most significant level conceivable to expand its warm effectiveness, however, to forestall the warm harm to the motor parts and the greases some measure of intensity should be taken out from the framework. In an ignition office of gas-powered motor, burning happen at high temperature and strain because of which chances of cylinder seizure, overheating, chances of cylinder ring, pressure ring, oil ring and so on can be

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DESIGN AND ANALYSIS OF SYMMETRIC ANDASYMMETRIC SPUR GEARS

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ABSTRACT—

Without gears, power cannot be transferred from one area of a machine to another. It is feasible to alter the characteristics of power transmission, including input direction, torque, and velocity. Throughout the power transmission process, they are subjected to a range of loads. The gears are severely strained by these stresses. If the strains are higher than what the gear's surface can sustain, failures happen. To reduce these stresses, several modifications are made to the gear design. The utilisation of unequal pressure angles between the driving and coast sides is one of these design modifications. This kind of gear is known as a "asymmetric spur gear". Compared to normal spur gears, these asymmetric spur gears can bear less force because to their wide roots teeth.

In this work, we examine spur gear designs that use various module numbers and pressure angles, and we assess and verify spur gear designs using Hertz theory.

This work also includes the design and analysis of asymmetric spur gears with different module combinations and their analytical representation. Ultimately, a comparative analysis of every gear is conducted, followed by the creation of graphs and recommendations.

Pressure angles, tensions in asymmetric spur gears, Hertz theory, and modules are explored.

INTRODUCTION

Gears are the most important and common instruments in present mechanical world for transmitting power. They vary in many sizes starting from smallest gears used in watches to large and huge gears used in heavy machines. They are very vital in any mechanical machines. These are used mainly for varying speeds, power, and also direction of input and output. For the different kinds of use there are different kinds of gears i.e., Bevel gears, helical gears, spur gears, worm gears. Among all these gears spur gears are simple gears. Their design is very simple compared to other gears. These gears while they are operating, they are subjected to different kinds of loads, thus resulting in lots of stresses in gears.

These stresses are of two types bending stresses and contact stresses. Bending stresses are calculated theoretically by using Lewis theory and contact stresses are calculated theoretically by Hertz theory. The gears are defined by many factors like module, pressure angle, pitch circle and many more factors. This paper mainly deals with module and pressure angle. Gears with different modules and pressure angles are designed and analyzed. Conventional gears have similar design on both sides of gears i.e., drive and coast side. They are subjected to many stresses. To reduce these stresses to some extent, we need to alter the design. The design alteration includes different pressure angles on drive and coast side. They are called asymmetric spur gears. Coming to point of discovery of gears it is dated at the time of 4th century BC in China which has been preserved at the Luoyang Museum of Henan Province, China. The earliest preserved gears in Europe were found in the Antikythera mechanism, it is an example of very early and complex design of a gear to calculate the astronomical positions. The time of construction Antikythera mechanism is now estimated between 150 and 100 BC. These gears were greatly developed by the then Greek polymath Archimedes (287–212 BC).

I. DESIGN OF SYMMETRIC SPUR GEARS

Design of symmetric spur gears is done in Catia V5 software. The dimensions required for the design of spur gears are obtained from the formulae [1]. This paper depicts the affects of module and pressure angle on the spur gear. Different modules are used to design a spur gear. Each module is again designed by two kinds of pressure angles i.e., 14.5 and 20. Modules are selected through the table given below [1]. Four modules are taken from choice1 and one module is taken from choice-2.

TABLE I

DIFFERENT KINDS OF MODULES

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MODELLING AND STATIC ANALYSIS OF ALLOY WHEEL RIM USING CARBON EPOXY COMPOSITE, AL6061 AND STAINLESS

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ABSTRACT

Wheel is a main mechanical term of the vehicular suspension system that supports the static and dynamic loads encountered during vehicle action. Since cars carry heavy loads of occupants as well as self-weight, the alloy wheel rim should be strong enough to withstand this load. Thus, their design should be done very cautiously. While designing such main kind of automotive component taking care of protection and cost are very important concerns so that user can use it safely. Major five technical considerations while modeling any new alloy wheel rim are styling, aesthetic, mass, manufacturability and capability. While analyzing stress and displacement distribution in vehicle wheels subjected to increase pressure and radial load .essential efforts have been taken to discover the Finite Element Techniques. Alloy wheel rim has been designed using SOLIDWORKS software, after that static structural analysis is done with different materials (Carbon epoxy composite, AL6061, Stainless) load and boundary conditions taking in ANSYS14.5 Software. Finally observed results of stress, total deformation, strain and shear stress on different wheel rims materials and compared with each other. Thus, the best design and material can be selected for manufacturing of the alloy wheel.

I. INTRODUCTION

The wheel is a device that enables efficient movement of an object across a surface where there is a force pressing the object to the surface. Early wheels were simple wooden disks with a hole for the axle. Because of the structure of wood a horizontal slice of a trunk is not suitable, as it does not have the structural strength to support weight without collapsing; rounded pieces of longitudinal boards are required. The spoke wheel was invented more recently, and allowed the construction of lighter and swifter vehicles. Alloy wheels are automobile wheels which are made from an alloy of aluminium or magnesium metals. Historically, successful designs was arrived after years of experience well aided worth extensive field - testing. Since the 1970's several innovative methods of testing and experimental stress measurements have been initiated. In more recent years, the procedures have significantly improved by the emergence of a variety of experimental and analytical methods for structural analysis. Durability analysis, that is: fatigue life prediction and reliability methods, for dealing with various inherent in engineering structures has been used for the study of automotive rims. In its basic form a wheel is a transfer element between the tire and the vehicle. The main requirements of an automobile wheel.

- It should be as light as possible so that unsprung weight is least.
- It should be strong enough to perform the above functions.
- It should be balanced statically as well as dynamically.
- It should be possible to remove or mount the wheel easily.
- It material should not deteriorate with weathering and age. In case, the material is suspected to corrosion, it must be given suitable protective treatment.

Figure 1 alloy wheel

Lighter wheels can improve handling by reducing unsprung mass, allowing suspension to follow the terrain more closely and thus improve grip, however not all alloy wheels are lighter than their steel equivalents. Reduction in overall vehicle mass can also help to reduce fuel consumption.

II. LITERATURE REVIEW

SIVA PRASAD ET AL. [1] does stress and dynamic analysis of car wheel rim by using

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DESIGN AND ANALYSIS OF GAS TURBINE BLADE PROFILE USING DIFFERENT MATERIALS

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ABSTRACT:
Gas turbines are currently one of the most efficient turbo machinery sources. This technology has applications in numerous sectors, including manufacturing, aerospace, household, and small-scale enterprises. Gas turbine engines present many challenges when choosing blade profiles, selecting materials, and controlling turbine rotor blade vibration. The influence of these factors on structural performance and stress deformation is significant. The total heat flux, the directional distortions of the turbine blades, and the thermal error resulting from the interaction between the heat and centrifugal loads have all been analyzed. In addition, the temperature flow is a result of thermal loading. The results for three materials (Inconel 718, titanium T6, and SS316) are compared to choose the optimum material for a turbine blade.
Key words: Gas Turbine Blade, study state Thermal analysis, Transient Thermal analysis

1.0 INTRODUCTION

Gas turbines convert thermal energy obtained from the combustion of fuel in pressure gas and high temperatures into mechanical energy to drive electric generators **[1]** The engine of a gas turbine consists of three main parts, namely compressor, combustion system, and turbine **[2]** Components in the combustion system have a significant role in ensuring reliable operation in various air/fuel ratios and loads. Conditions of hot section components such as nozzles, burners, and blades exposed to hot gas coming out of the combustion system are very vulnerable to failure **[3].** The first stage blades in the turbine are considered very critical in hot gas path inspection. The most common failure mechanism modes in the nozzle and blade are fatigue, creep, erosion, and corrosion **[4]**. The first stage blade in a gas turbine function as a guide of hot gas supplied from the combustion chamber towards the turbine blade so that the blade experiences high heat pressure **[5]** Blades in turbines are usually made of nickel superalloys, coated with a thermal barrier **[6]** Gas turbines are the primary generators of energy in each of these experiments. Due to the high efficiency of gas turbines, they were chosen as the best option for this application. Three major components make up a simple gas-turbine: compressor, combustor, and turbine. Fuel and compressed air are combined and burned in a gas turbine that runs on the Brayton cycle principle. In order to generate power, the hot gas is expanded by turning a turbine.

Gas turbine:

Gas turbine engines convert the chemical energy of the fuel into mechanical energy, which can be expressed as shaft power or kinetic energy. Power production gas turbines are gas turbines specifically designed to produce electricity. The gas turbines on an airplane transform the fuel's potential energy into motion. Several parts of the engine collaborate to convert the energy stored in the fuel into the shaft power or propulsion force that moves the engine.

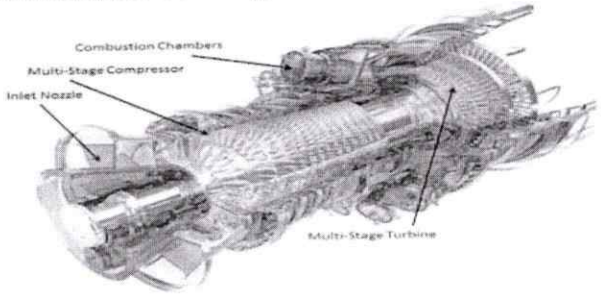

Figure 1: Gas turbine

Gas turbines convert combustion energy into heat by compressing the working gas (air). The working gas is subjected to rising temperatures and pressures. Working gas energy is converted into rotating blade energy by means of gas-blade interaction in the engine. Both types of gas turbines can be shown in the diagram below. There is an open cycle (which is internal) and a closed cycle (external type). The combustor and the turbine are the most crucial components of both compressors.

Gas turbine blade:

FINITE ELEMENT ANALYSIS OF ALUMINA-MILD STEEL WELDED TUBE OF INTERNAL STRESSES

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ABSTRACT:
In this paper to Evaluation of mechanical and interfacial properties of friction welded alumina-mild steel rods with the use of Al6061 sheet are presented in this work. The bonds were attained through interfacial interlocking and intermetallic phase formation with average bending strengths in the range of 40 to 200 MPa and insignificant hardness change in the parent alumina and mild steel. A preliminary simulation was made to predict the deformation, stress, strain and temperature distribution during the joining operation using a fully coupled thermo-mechanical FE model. The aluminum alloy metal being rubbed was simulated using a phenomenological Johnson-Cook viscoelasticity material model, which suited for materials subjected to large strains, high strain rates and high temperatures. The highest stress, strain and deformation are found to be within the heat affected zone of the weld close to the periphery rubbing surface region and correspond to the highest temperature profiles observed.

Keywords: friction welding, intermetallic, FE model, interface, bending strength

1.0 INTRODUCTION

The friction welding of 6061-T6 aluminum and AISI 1018 steel and suggested that a thin, discontinuous intermetallic layer formed at the bond line was a result of interdiffusion between iron and aluminum. Intermetallic generally result in mechanical degradation of the joint **[1].** The formation of these phases is mainly driven by interdiffusion of the species and is highly dependent on the specific time and temperature history of the welding process. The extended thermal cycles (higher temperatures/longer times) associated with fusion welding processes generally result in the formation of thick intermetallic compound (IMC) layers at the joint interface **[2].** The formation of these layers is generally considered the root cause for property degradation seen with these types of joints. FW can facilitate joint formation at lower temperatures, often at very short times, and is generally associated with reduced formation of these intermetallic phases. For ceramics - metal welding, the intermediate layer apart from thermo-plastic deformations of metal plays a significant role **[3].** It seems that besides adhesion, the diffusion of atoms from the metal layer into the ceramic foundation can cause sealing of a ceramic material with metal. This is confirmed by the results of investigation on linear distribution of elements, carried out by means of electron probe techniques **[4]**. The gradient of aluminum concentration, temperature gradient and stress field are the factors that power the atom migration in metal during the welding process. The predicted the average diffusion coefficient of Al to Alumina ($D = 1.8 \times 10^{-13}$ m^2/s) in friction welded Alumina-Al6061 and stated that the diffusion region occurred in several micro meter's distances.

Scope of the study

To analyse mechanical strengths and interfacial properties in bonded alumina-mild steel rods during the friction welding process where an interlayer Al6061 sheet is used. A preliminary simulation is made to predict the deformation, stress, strain and temperature distribution during the joining operation using a fully coupled thermo-mechanical FE model.

2.0 LITERATURE REVIEW

In recent years, the use of joints between dissimilar metals has considerably increased. In the development of new technologies for the aerospace, medical and automotive industries, these junctures are of high importance, because they allow the systems, components manufactured in mild steel and aluminum to be structurally united Sepe, R.; Armentani **[5]** performed a study in a dissimilar welding butt joint (titanium and aluminum), using a fiber laser welding method. 2D and 3D Gaussian heat source were used to study the thermal analysis of this welding process. The experimental fusion zone of the joint was compared with the numerical one. During the welding cycle, the actual temperature was registered and was validated by the numerical model. To calculate fusion zone's dimension, the 2D model

MODAL ANALYSIS OF NACA 4412 AIRFOIL BASED AIR-WING USING DIFFERENT COMPOSITE MATERIALS

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ABSTRACT

In making of air craft wing the study of aerodynamic characteristics and the weight reduction in air wing place a vital role for improving the efficiency and performance. The designis largely depends on type of aerofoil profile and material to be used. In this project an attempthas been made to calculate the natural frequencies on NACA 4412 aerofoil profile blade and the light weight composite materials used for making this NACA 4412 are Alpha-Beta Titanium Alloy, Carbon Fiber, Al-Zn-Mg Alloy and it is observed that by increasing the frequency in allthe modes the vibrations increases and there is an optimum value of frequency at which natural frequency vibrations minimum there is some optimum value of frequency at which natural frequencies in different modes of vibration are minimum. The model developed by using SOLIDWORKS has been imported to ANSYS workbench; the modal analysis has been carriedout by putting the required parameters. The objective of the study is to find out which materialwill be suitable for withstanding frequencies of NACA 4412 among Carbon Fibre, Alpha-BetaTitanium Alloy and Al-Zn-Mg Alloy.

I. INTRODUCTION TO NACA 4412 AEROFOIL:

A wind turbine is acted upon by four aerodynamic forces; Thrust, Drag, Lift, and Weight. Wind turbines are able to produce torque due to the aerodynamic force produced whena fluid passes over the airfoil. An Airfoil is defined as the cross-section of a body that is placedin an airstream in order to produce an aerodynamic force in the most efficient manner possible.If the pressure below the wing is higher than the pressure above the wing, there is a net force upwards and this upward force generates lift. In this project NACA 4412 aerofoil and its modified designs are used to analyze the factors like lift and drag coefficients, however, the term NACA is an abbreviation of (National Advisory Committee for Aeronautics), and the first digit in 4412 denotes the maximum camber, C max, as a percent of the chord. the second digit denotes the chord wise position of the maximum camber, XC max, in tenths of the chord. the last two digits denote the maximum thickness of the airfoil section, t, as a percent of the chord.

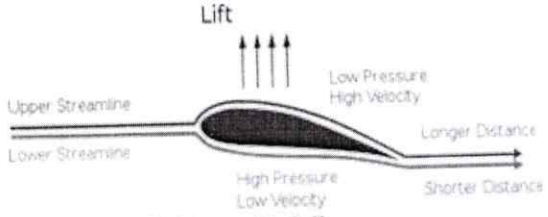

Fig.1 Forces Acting on Airfoil

The airs flowing below the wing moves in a comparatively straighter line, so its speed and air pressure remain the same. Since high air pressure always moves toward low air pressure, the air below the wing pushes upward toward the air above the wing. The wing

is in the middle, and the whole wing is "lifted." The faster an airplane moves, the more lift there is. And when the force of lift is greater than the force of gravity, the airplane is able to fly.

Aerodynamic is a study of the powers and moments vital to possess a sustainable aerialmovement. The aerodynamic force functioning on the flying vehicle can be described as "lift indirection normal to the flight" with "drag in the same direction". Hence, various factors such as aircrafts' load, size, rate of climb, and required landing speed need to be heavily considered to design wings. With that, this study aims to find drag and lift contribution in wing's aircraft by analysis approach by investigating the better performance of the wing at various wing aspect ratio and its aerodynamic achievement; which can be analyzed by observing not just the coefficients of drag and lift, but also the lift drag ratio. It is a reality of general expertise that body in moving through a fluid covering with a resultant force that by and hugged in a very primarily movement of the resistance. A category of the body exists, regardless, that the fragment of the resultant force ordinarily to the orientation of the event is sometimes additional clear than the contradicting the event to boost the likelihood of the flight of a plane depends upon the usage of the body of this category for wing structure. The approach is that the purpose between the approach air or relative

MODELING AND STATIC MODAL ANALYSIS OF GANTRY CRANE USING VARIOUS MATERIALS

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ABSTRACT

A crane is lifting machinery, discontinuous movement aimed at raising and distributing loads in space, suspended from a hook. Cranes available in the market are grinder travelling crane, overhead travelling crane, jib cranes, wire rope hoist, and gantry cranes. The Gantry cranes are one of the most important mechanical components in the heavy weight lifting and loading in to cargos, into trains, in to heavy truck vehicles, etc. Different types of gantry cranes available in the industries are container cranes, workstation gantry cranes (or) light weight mobile gantry cranes and semi gantry cranes. These vase verity of gantry cranes are differed based on the tonnages and area to be covered for lifting and moving the weights.

The workstation gantry crane is the most economical solution in all those places where it is desired or civil works or expensive fixed mount metal structures, and where necessary make loading (or) unloading on a regular basis and at points different.

In our project, first, three dimensional geometry of the workstation gantry crane is built in, SOLIDWORKS. Then analysis of I-section beam, the part which is used to carry the loads in Gantry crane, is carried out by using finite element method in ANSYS software for different loads Apply on I section, clamp, hook and at different positions. Using materials in this project structural steel, 34CrMo4 Chrome steel, carbon steel 1020, AISI 4130. We estimate the load bearing capacity of I-section beam by placing the loads at different positions i.e. (from left end of I-section, 1st position is 1300mm, 2nd position is 4300mm and 3rd position is 5300mm) and by observing von-missies stresses, Shear stress, and deflections generated from static analysis in ANSYS 14.5. finally concluded the suitable material on these 4 materials and which position and find out the deformations in different frequencies by using modal analysis

I. DEFINITION OF CRANE:

Lifting device, used to elevate or lower loads vertically and to move them horizontally while they are hanged It will be presented all types of cranes with their mainly characteristics. The classification will be done as follows

- According to design.
- According to movement possibilities.
- According to the device control.
- According to orientation possibilities.

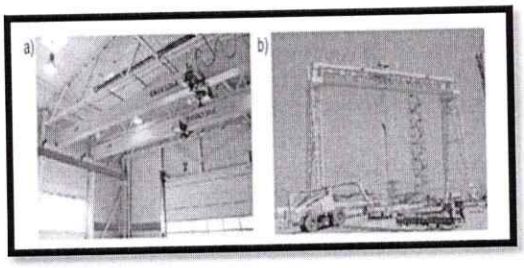

Figure 1 bridge crane

Gantry cranes, bridge cranes, and overhead cranes, are all types of cranes which lift objects by a hoist which is fitted in as hoist trolley and can move horizontally on a r rail or pair of rails fitted under a beam. An overhead travelling crane, also known as an overhead crane or as a suspended crane has the ends of the supporting beam resting on wheels

running on rails at high level, usually on the parallel side walls of a factory or similar large industrial building, so that the whole crane can move the length of the building, while the hoist can be moved to and from across the width of the building. A gantry crane or portal crane has a similar mechanism supported by uprights, usually with wheels at the foot of the uprights allowing the whole crane to traverse. Some portal cranes may have only a fixed gantry, particularly when they are lifting loads such as rag always cargoes that are already easily moved beneath them.

COMPONENTS OF BRIDGE CRANE TYPE

- **The Bridge:** It travels along the working area (building, harbor, construction site…)
- **The trolley:** It moves over the bridge and along the width of the working area.
- **The hoist:** Mounted in the trolley and performs the lifting and lowering action via a hook or lifting attachment.

GANTRY CRANE

Crane whose carrier elements are supported on a raceway through support legs the difference with the overhead crane ibis that the rails are in a

MODELLING AND STATIC THERMAL ANALYSIS OF MULTI CLUTCH PALTE BY USING DIFFERENT MATERIALS

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ABSTRACT

A clutch is a mechanical device which provides for the transmission of power motion from one component to another component .The opposite component of the clutch is the brake. A multi plate clutch may be used when a large torque is to be transmitted. The multi disc clutches are extensively used in motor cars, motorbikes, machine tools etc. The aim of the project is to design a multi plate clutch by using theoretical values. A 2D drawing is drafted for multi plate clutch from the calculations and a 3D model is created in the SOLIDWORKS modelling software took for pulsar 150cc bike Existing vehicle. We have done FEM analysis by varying friction materials with some non metals By extracting the result we are going to find out which material is best for the multi clutch plate by using Structural analysis and thermal analysis using these material properties of the Four materials, Grey cast iron, SF001,Zamak,AL7075,etc....,

Index Terms— ANSYS, SOLIDWORKS, Grey cast iron, ZAMAK, AL7075, SF-001, Wet-Clutch plate, Von-misses stress, Total Deformation, temperature distribution and heat flux.

I. INTRODUCTION

Clutch is a device used in the transmission system of a vehicle to engage and disengage the transmission system from the engine. Thus, the clutch is located between the engine and the transmission system. In a vehicle, the clutch is always in the engaged position. The clutch is disengaged when starting the engine, when shifting gears, when stopping the vehicle and when idling the engine. It is disengaged by operating the clutch pedal i.e. by pressing the pedal towards the floor of the vehicle. The clutch is engaged when the vehicle has to move and is kept in the engaged position when the vehicle is moving. The clutch also permits the gradual taking up of the load, when properly operated; it prevents jerky motion of the vehicle and thus avoids putting undue strain on the remaining parts of the power transmission.

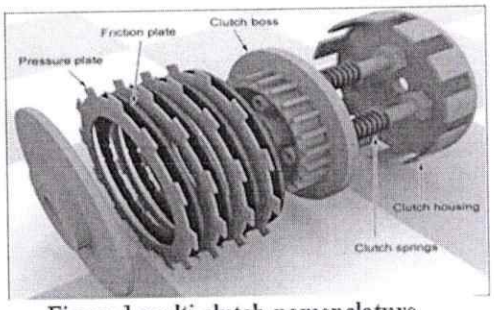

Figure 1 multi clutch nomenclature

The energy necessary for the motion of a vehicle is transmitted by the engine to the wheels through the flywheel, the clutch system and the driveline. The clutch takes the energy from the flywheel and transmits it to the driveline. During the engagement process, the friction torque acts upon the friction surfaces of the clutch as an engaging force for the driveline. A part of the energy transmitted through the driveline is transformed in to other forms of energy by positive damping effects. It is disengaged by operating the clutch pedal i.e. by pressing the pedal towards the floor of the vehicle. The clutch is engaged when the vehicle has to move and is kept in the engaged position when the vehicle is moving. The clutch also permits the gradual taking up of the load, when properly operated; it prevents jerky motion of the vehicle and thus avoids putting undue strain on the remaining parts of the power transmission. Single plate friction clutch the parts of a single plate clutch can be seen below .It has only one clutch plate, mounted on the splines of the clutch shaft. This is the most commonly used type. The flywheel is mounted on the crankshaft, and rotates with it. The pressure plate is fixed on the flywheel through the pressure plate is fixed on the flywheel through the clutch springs. The plate rotates freely on the clutch shaft. It can also be moved axially along the clutch shaft. The axial movement of the pressure plate is effected by pressing the clutch pedal. The end of the clutch shaft rests and rotates freely in the pilot bearing housed at the centre of the flywheel. The splined portion of the clutch shaft carries the clutch plate whose details

MODELLING AND CONTROL OF RURAL PV MICRO GRID USING FUZZY LOGIC CONTROLLER

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ABSTRACT:

This paper proposes an approach for the hybrid solar photovoltaic and Battery management for stand-alone applications. Battery charging process is non-linear, time-varying with a considerable time delay so it is difficult to achieve the best energy management performance by using traditional control approaches. A fuzzy control strategy for battery charging or discharging used in a renewable power generation system is analyzed in the paper. To improve the life cycle of the battery, fuzzy control manages the desired state of charge. A fuzzy logic-based controller to be used for the Battery SOC control of the designed hybrid system is proposed. This paper presents a general description of the implemented microgrid topology. The exact linearization theory adapted for power converters is applied to both a Single-Ended PrimaryInductor converter (SEPIC) to extract energy from PV modules and to a Boost converter to increase the voltage. The entire designed system is modeled and simulated using MATLAB/Simulink environment.

Keywords: SEPIC, Fuzzy, PV, Microgrid, DC-DC converter, THD.

INTRODUCTION

In the present scenario, the proliferation of energy call for of households and industries, create demanding situations and set a limit on the energy generation from the conventional strength assets [1]. the solution to this hassle lies someplace within the core of electricity through renewable energy resources (RES) [2], with efficient, cost effective and dependable generation via RES. the rural electrification is supplied by means of a standalone diesel generator and an integration of other RES in [3–7]. but, the setback for this technology is an RES intermittent nature. This leads to the factor over sizing while designing any hybrid renewable power primarily based microgrid (MG). This also will increase the preliminary price, operational value, and lifestyles cycle cost. these shortcomings open the window for hybridisation of RES to back up each other. however, this requires the top-rated integration of RES

COUPLING ALL-ATOM MOLECULAR DYNAMICS SIMULATIONS OF IONS IN WATER WITH BROWNIAN DYNAMICS

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ABSTRACT:

Investigations are conducted using molecular dynamics (MD) simulations of ions (K+, Na+, Ca2+, and Cl−) in aqueous solutions. We use the SPC/E model to explain water. Using MD simulations, a stochastic coarse-grained description of ion behavior is presented and parameterized. It describes the position, acceleration, and velocity of the ions and is presented as a system of coupled stochastic and ordinary differential equations. A description in between Brownian dynamics (BD) models and all-atom MD simulations is offered by the stochastic coarse-grained model. It is applied to the development of a multiscale technique that employs (less detailed) BD simulations in the remaining computational region and all-atom MD simulations in other areas.

Key words: Brownian dynamics, molecular dynamics, and multiscale modeling

1 Introduction:

Molecular dynamics (MD) simulations of ions in aqueous solutions are limited to modelling processes in relatively small domains containing (only) several thousands of water molecules [1, 2]. Ions play important physiological functions in living cells which typically consist of 1010–1012 water molecules. In particular, processes which include transport of ions between different parts of a cell cannot be simulated using standard all-atom MD approaches. Coarser models are instead used in applications. Examples include Brownian dynamics (BD) simulations [3] and mean-field Poisson-Nernst-Planck equations [4]. In BD methods, individual trajectories of ions are described using

$$\mathrm{d}X_i = \sqrt{2D}\,\mathrm{d}W_i, \qquad i = 1, 2, 3, \tag{1.1}$$

where X = [X1, X2, X3] is the position of the ion, D is its diffusion constant and Wi , i = 1, 2, 3, are three independent Wiener processes [5]. BD description (1.1) does not explicitly include solvent molecules in the simulation. Moreover, in applications, equation (1.1) can be discretized using a (nanosecond) time step which is much larger than the typical time step of MD simulations (femtosecond) [6]. This makes BD less computationally intensive than the corresponding MD simulations.

Longer time steps of BD simulations enable efficient simulations of ion transport between different parts of the cell, but they limit the level of detail which can be incorporated into the model. For example, intracellular calcium is regulated by the release of Ca2+ ions from the endoplasmic reticulum via inisitol-4,5-triphosphate receptor (IP3R) channels. BD models in the literature use equation (1.1) to describe trajectories of calcium ions [3, 7]. The conformational changes between the open and closed states of IP3R channels are controlled by the binding of Ca2+ to activating and inhibitory binding sites. BD models postulate that

EFFECT OF ATOMIC NUMBER AND MASS ATTENUATION COEFFICIENT IN Ni-Mn FERRITE SYSTEM

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Abstract

The investigation of composite materials' total photon interaction cross-section For the purpose of studying the total photon interaction cross-section, Ni0.5Mn1.5Cd0.2Fe2O4 spinel ferrite was manufactured using a normal ceramic procedure and analyzed using the X-ray diffraction method. The XRD pattern indicates that the prepared sample has a single-phase cubic spinel structure. The linear attenuation coefficient (μ), mass absorption coefficient (μ/ρ), total photon interaction cross-section (total electronic cross-section (-electronic), and effective atomic number for produced spinel ferrite composite materials were determined utilizing a fully collimated geometry setup. The measurements of the attenuation coefficient were made with a radioactive gamma scintillation detector using pure NaI. There is good agreement between the theoretically predicted mass attenuation coefficient value and the empirically measured value.

Key words: total photon interaction, MAC, and LAC.

Introduction

The study of photon interaction with diverse composite materials has become a subject of utmost relevance for radiation physicists due to the ever-increasing use of gamma rays in numerous industries such as industry, medicine, and agriculture. The effective atomic number, total photon interaction cross-section, mass attenuation coefficient, and total electronic cross-section are a few metrics of do symmetric importance. The fundamental understanding of photon interaction with composite materials is aided by these factors.[1,2]

The attenuation coefficient of the gamma ray for various elements and photon energy has been extensively studied.[4-6] A mixed rule for the photon attenuation coefficient has recently been employed by numerous researchers[7,10,11] using a variety of composite materials, including Bakelite, cement, high T_c superconductors, and biologically significant materials. There are studies in the literature that demonstrate there are reports in the literature, which show effects of gamma rays on physical properties of spinel ferrite.[12] Because they have the dual properties of being an electric insulator and a magnetic conductor, ferrites, a class of semiconducting materials, are extremely important in technology. They can be employed in radar-absorbing coatings, high-frequency transformers, field sensors, memory cores, and recording systems for

NANOTECHNOLOGY INCORPORATION INTO ROAD PAVEMENT DESIGN BASED ON SCIENTIFIC PRINCIPLES OF MATERIALS CHEMISTRY AND ENGINEERING PHYSICS

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ABSTRACT:
The use of naturally available materials not conforming to traditional specifications or standards, in the base and sub-base layers of road pavement structures, stabilised with New-age(Nano) Modified Emulsions (NME), have been tested, implemented and successfully verified through Accelerated Pavement Testing (APT) in South Africa. This was made possible through the development and use of a design procedure addressing fundamental principles and based on scientific concepts, which are universally applicable. The understanding of and incorporation of the chemical interaction between the mineralogy of the materials and a NME stabilising agent (compatibility between the chemistry of the reactive agents and material mineralogy) into the design approach is key to achieving the required engineering properties. Stabilised materials evaluation is done using tests indicative of the basic engineering properties (physics) of compressive strengths, tensile strengths and durability. This article describes the basic materials design approach developed to ensure that organofunctional nano-silane modified emulsions can successfully be used for pavement layer construction utilising naturally available materials, at a low risk. The enablement of the use of naturally available materials in all pavement layers can have a considerable impact on the unit cost and life-cycle costs of road transportation infrastructure.

Keywords: road pavement design; design based on materials science; material mineralogy; Newage (Nano) Modified Emulsions (NME); naturally available materials; material stabilisation; basic engineering requirements; Unconfined Compressive Strengths (UCS); Indirect Tensile Strengths (ITS); Retained Compressive Strengths (RCT) and; Retained Tensile Strengths (RTS).

INTRODUCTION:
Organofunctional nano-silane technologies have been used in Europe for the protection of stone buildings for more than 150 years [1,2]. The application of various nanosilane products has been used to protect buildings against the climatic effects of moisture, providing a hydrophobic protective layer preventing further decay due to chemical weathering. Initial work done by scientists to develop protective products relied on trialand-error testing and resulted in contradictorily results as reported by various scientists. Eventually, it was concluded that the successful application of a silane-based protective product depends to a large extent on the compatibility of the nano-silane product to the "type of stone" as well as the "condition of the stone" to be treated [3]. The technology developed in the built-environment, as well as the "lessons learnt" can find direct application and should form the basis for the successful introduction and treatment of

SYMMETRIES OF MANY-BODY SYSTEM SIMPLY DISTANCE-DEPENDENT POTENTIALS

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ABSTRACT:

It is demonstrated that U can be constructed as a function of the interatomic distance variables rij = |qi − qj |, given that the potential U meets certain symmetry assumptions, by considering the interatomic potential U(q), where q = [q1, q2,..., qN] ∈ R 3N is a vector defining locations, qi ∈ R 3. Furthermore, if N > 5, the potential U can be expressed as a function of a suitable subset of the distance variables rij, where the number of distance variables varies in a linear fashion with N, the number of atoms.

INTRODUCTION

The theory of classical interatomic potentials has been developed for decades, a review of this research area is provided by Murrell et al [1] or more recently by Ackland [2]. The basis of molecular modelling is dependent on creating a suitable potential energy function that defines the free energy surface and dynamics of the system, accurately, while also balancing computational feasibility. One must compromise by reducing degrees of freedom with some method of coarse-graining [3]. A key way to do this is by explicitly constructing a potential energy function that reduces the complexity of the system. Many such function choices can naturally arise for a given system [4]. Commonly pair potentials are used to approximate potential energy contributions though caution must be taken to use these appropriately [5]. Despite this: effective pair potentials in many classical circumstances have had fair degrees of success for decades in simulations of liquids [6–11]. To obtain more accurate results from thermodynamic calculations, many-body contributions are considered in the potential energy function [12, 13]. An example potential incorporating two-body and three-body terms is the Stillinger-Weber potential [14] which accurately incorporates the geometry of silicon, meaning that not only do the pairwise bonds between the silicon atoms matter, but also the triangular sub structures connecting neighbouring atoms [15]. The embedded atom method potentials [16] incorporate an effective pairwise potential and a density dependent contribution without using the geometric features explicitly. Progressing from pair potentials, to those incorporating three-body terms, and four body terms, the most general interatomic potential considered is a sum of all of these contributions, which can also include the single body terms that arise when an external field is present. The n-body terms are explicitly evaluated given the coordinates of the N atoms: which can be thought of as vertices of a polygon (if co-planar) or a polyhedron. These n-body terms in the potentialare then thought of as contributions arising from the ngon substructures of the shape formed by the vertices. This forms the basis of fragmentation methods used in ab initio quantum chemistry, a summary and a closed form expression for energy is presented by Richard et al [17]. Tandem to this, cluster descriptions of manybody configurations [18] can also be used in conjunction with n-body expansions of the many-body potential [19], this differs from the previous method as this relies on the ordering of vertices as opposed to their position. Non-reciprocal interactions, where pairwise forces do not obey Newton's third law [20], are applicable to colloidal physics [21], active transport [24], and plasma physics [22, 23]. The

THE VIEW FROM HERE – AT THE CROSSROADS BETWEEN EAST AND WEST: TEACHING ENGLISH LITERATURE IN CYPRUS

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ABSTRACT:

What does "English" mean now?' This is the question with which the new editorial team of this journal opened up their Editorial in 2016 in a volume (no. 65) that expressed the team's dedication to considering the multiplicity of voices and viewpoints produced by English as a 'global discipline'. The invitation to contribute to the series of pieces inaugurated in that issue under the title 'The View from Here' has been an opportunity for me to reflect on my own position as a teacher of English literature on the island of Cyprus. The questions this process has generated are too numerous and complex to answer fully in a short piece like this. For instance, what does it mean to teach English literature today on an island that is in many ways still caught up culturally and politically between its colonial past and its post-colonial (or, should I say, neo-colonial) present? More specifically in my case, what does it mean to teach Renaissance English literature to university students in Cyprus? How is that inflected by our place in history and current geopolitical position? What differences, if any, are there between teaching this literature to British students and teaching it to Cypriot ones? How does my own position as a Greek-Cypriot academic come into play, for instance, in the kinds of questions I ask and invite my students to ask about texts? The history of Cyprus has always been defined by its unique geo-political position. Situated at the Eastern point of the Mediterranean, at the crossroads, so to say, between East and West, it has been since antiquity the target of a long series of conquerors. Having gained its independence from British colonial rule in 1960, the country continues to carry the traces of its long colonial past and a Department of English Studies on the island cannot but be attuned to the various questions that arise from the position of English in the postcolonial world. As we have now moved from an age of colonization to an age of globalization, it should also not fail to address such issues as the shift of English from a colonial language to a global language. These are questions my home department at the University of Cyprus has shown particular interest in addressing, with a range of courses covering Anglophone literature more broadly, in an attempt to invite students to reflect critically on the transcultural role of the English language and English literature in today's globalized world.

But how does one teach literature that is both linguistically foreign in relation to the students' native tongue and historically distant from their modernday experience? Educationally, one of the most tenacious elements in the legacy of British colonial rule in Cyprus has been the predominance of teaching English as a second language in the primary and secondary public-school education on the island. By implication, the majority of students who enter the Department of English Studies at the University of Cyprus (following competitive entrance exams) have a relatively high level of proficiency in English. Nonetheless, their exposure to courses such as Shakespeare is always a bit of a shock initially. No doubt, British students are also removed from the spelling, morphology, and syntax of early modern texts. However, our students here (as I am sure students in various other non-Anglophone countries) are doubly

A MULTI-LEVEL CONVERTER IS USED TO CONTROL CURRENT IN SMALL-SCALE DC MICROGRID

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***Abstract*—**multilevel converters are promising solutions in Small-Scale DC Power Network since they allow the combination of excellent harmonic performance and low switching frequencies. A high reliability can also be achieved by including redundant sub modules in the chain of cascaded converters. DC micro grids have been emerging as next generation small-scale electric power networks, where the line impedance is very low. This phenomenon causes large currents in the micro grids, even for a slight change in voltage; therefore, it is critical for a power flow controller to have faster transient response and precise power flow control. In this study, multi-level converters are applied as the power flow controllers to realize high speed and high-precision power flow control in a dc micro grid. The output filter can be small, as a multi-level converter is used. This project also presents the design of the output LC filter of a multi-level converter to satisfy a requirement of current ripple. We can verified that a multi-level converter with a smaller filter can realize high-speed and high-precision power flow control for low line impedance conditions compared with the conventional two-level converters. The control performance of each output current is evaluated in the step response, considering the transient changes in the power flow by using MATLAB/Simulink Simulation results.

I. INTRODUCTION

Inverters are very useful for various industrial applications. In the last few years, the voltage-driving method has been adopted. To reduce the semiconductor transient voltage and current rating, a series and parallel connection method is needed. Moreover, the limited standard three-phase converter is also adopted up to the maximum allowable voltage of the load. Also, both the primary and the Pulse width modulation (PWM) switching frequency can be useful. The reduced switching frequency shows the low disappearance and the higher efficiency. In order to synthesize the spectrum signals of the harmonics caused by the capacity, the multi-level inverter has received more attention in recent times. Moreover, a multilevel inverter has a key role in providing improved operating voltage beyond the voltage limits of conventional semiconductors. For low power photovoltaic systems, the classical two-level inverter is typically employed as the interface between dc-link and grid. However, modern wind turbines, which range from hundreds of kilowatts up to a few megawatts, demand special converter structures. One alternative is to connect switching devices in series to cope with the high voltage stress. However, this technique requires a precise method to ensure the voltage share between the devices in dynamic and static situations. Another method that has been well accepted by the industry, and is emerging as the standard solution for high power medium voltage applications, is the Multilevel Converter. These structures have the ability to synthesize the output waveform from several levels of voltages, improving the spectrum quality when compared with the classical two-level topology.

A dc microgrid helps achieve efficient power transfer by reducing the number of power conversion stages between the ac and dc sides, because most grid-tied renewable energy systems deal with dc power on both input and output sides. Line impedances are usually very low in a dc microgrid owing to the shorter distances between the nodes such as the generators, batteries, and loads compared with a large scale ac grid; thus, a large current flows through the lines even for a slight change in voltage. To suppress the excess current, a two-level converter needs a bulky output filter. A part of a grid configuration connecting only two converters and a passive resistive load has been investigated. It proposes an efficient power flow sharing and voltage regulation control method based on a hierarchical control to minimize the transmission loss of the dc micro-grids. The circuit topology used for the above studies in has been mainly the two-level converter. Moreover, an improvement of the dynamic performance has not become their main objectives. Meanwhile, there are studies aiming the realization of the high-speed response of the individual converter. In a control method to realize the fast current response in a dc–dc converter was reported. This method assumes a lowvoltage power supply with conversion from 5.5 V to 3.3 V and a switching frequency in MHz range to be integrated on a chip or in a package. It proposed a predictive current control for a bidirectional two-level dc–dc converter to enhance

CONTROLLING THE CURRENT IN A SMALL-SCALE DC MICROGRID REQUIRES THE USE OF A MULTI-LEVEL CONVERTER

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Abstract:

Since multilevel converters provide the combination of outstanding harmonic performance and low switching frequencies, they are a potential option in Small-Scale DC Power Network. With the addition of redundant sub modules in the cascaded converter chain, dependability may be further increased. Next-generation small-scale electric power networks, DC microgrids have extremely low line impedance and have been on the rise.

This phenomenon creates significant currents in the micro grids with even a little change in voltage, making quick transient response and accurate power flow regulation essential for a power flow controller. In order to achieve fast and precise power flow regulation in a dc micro grid, this research employs multi-level converters as the controllers. Because of the use of a multi-level converter, the output filter may be made rather compact. The current ripple requirement is met by the design of an LC filter at the multi-level converter's output, which is shown in this project. By comparing the performance of a multi-level converter with that of a traditional two-level converter, we find that the latter is unable to manage the flow of power via low-impedance lines at fast speed and with the same degree of accuracy. Step response analysis utilising MATLAB/Simulink simulation results assesses the control performance of each output current in light of transient changes in the power flow.

I.INTRODUCTION

For a wide range of uses in industry, inverters are invaluable. The voltage-driving strategy has gained popularity in recent years. Transient voltage and current ratings for semiconductors may be reduced by connecting them in series and parallel. In addition, the normal three-phase converter's restrictions are used up to the load's maximum voltage. The main switching frequency and the Pulse width modulation (PWM) switching frequency may be advantageous as well. The low disappearance and increased efficiency are shown by the decreased switching frequency. Greater focus has recently been placed on the multi-level inverter as a means of synthesising the spectrum signals of harmonics brought on by capacity. In addition, a multilayer inverter is crucial in delivering enhanced working voltage above the voltage limitations of standard semiconductors. Typically, the standard two-level inverter is used as the interface between the dc-link and the grid in low power solar systems. However, unique converter structures are required for today's wind turbines, which may generate anywhere from several hundred kilowatts to several megawatts of power. The high voltage stress may be handled in a number of ways, one of which is by connecting switching devices in series. However, a reliable mechanism for regulating the voltage distribution among the devices in both dynamic and static conditions is necessary for this approach to work well. When it comes to high power medium voltage applications, the Multilevel Converter is quickly becoming the technique of choice due to its widespread acceptance in the industry. These circuits may improve the quality of the spectrum over the traditional two-level design by synthesising the output waveform from a wider range of voltages.

Most grid-connected renewable energy systems deal with dc power on both the input and output sides, therefore a dc microgrid helps accomplish efficient power transfer by decreasing the number of power conversion steps between the ac and dc sides.

Due to the smaller size of the dc microgrid's

Linear-Quadratic Regulator Controller with Fuzzy based High Performance Frequency Converter Controlled Variable-Speed Wind Generator

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Abstract—This paper proposes an optimal control strategy with a view to achieving the best performance of a wind energy conversion system (WECS) with fuzzy logic. The optimal control strategy depends on the linear-quadratic regulator (LQR) algorithm with fuzzy logic, which provides fast convergence and less mathematical intricacy and harmonic control. The machine- and the grid-side converter/inverter are adjusted using the LQR controller. In this study, the system model and its control strategies are illustrated. Wind speed data are considered in this study for achieving realistic responses. The system performance is evaluated by comparing the results obtained using the LQR controller with that realized when the grey wolf optimizer algorithm-based optimized proportional-integral controllers and fuzzy logic controller are used, taken into account severe network disturbances. The simulation studies are extensively performed through the MATLAB/Simulink environment that prove the validity of the LQR controller for improving the performance of the WECS with harmonic controlling. The simulation results are compared with the experimental results for more validation.

Index Terms—Frequency converter, linear-quadratic regulator (LQR), permanent-magnet synchronous generator, power system control, variable-speed wind turbine.

I.INTRODUCTION

Wind power is considered the mainstream clean energy source in the electric power generation. Political matters, the depletion in fossil-fuel, and the rise in fuel prices are the main reasons that allow wind power to penetrate the power networks. In 2017, the cumulative global wind power capacity reached 539 GW, which is an increase of 11% compared with 2016 [1]. By 2022, it is predictable that the cumulative wind power capacity shall realize 840 GW worldwide [1]. The variable-speed wind turbine generator systems (WTGSs) are vastly applied in wind power applications because of the lower mechanical stress, the better control capability, and the high efficiency that they present than the fixed-speed [2], [3]. Different classes of electric machines are utilized in the variable-speed WTGSs. Among them, permanent-magnet synchronous generator (PMSG) has received great concerns in the modern wind industry because of the self-excitation and the high efficiency [4]–[6].

The variable-speed (VS)-WTGS driving PMSG is integrated into the grid via a full capacity frequency converter. The frequency converter consists of two power converters, which are tied through a dc-link [3], [6]. Each converter has six insulated gate bipolar transistors (IGBTs). However, this topology uses more controlled switches, resulting in the system is more expensive and less reliable. Few research efforts have been exerted to produce high-performance, simple, and reliable power converters with reduced number of power switches, losses, and cost in order to track the industrial requirements. The four-switch three-phase (FSTP) converter has been presented with four power switches as a substitute to the six-switch three-phase (SSTP) converter. The FSTP converter has some features over the SSTP converter, such as reduced the number of utilized switches by one-third, reduced the complexity of the driving circuits, where there are only two controlled branches which require only two interface driving circuits, and the maximum common mode voltage of the FSTP converter is two-thirds that of SSTP converter [7], [8].

Traditionally, the control of the machine-side converter (MSC) and the grid-side inverter (GSI) uses the proportional-integral (PI) controllers because of the robustness and the wide stability margins of these controllers [3]. However, these controllers have high

POWER QUALITY IMPROVEMENT IN HYBRID POWER SYSTEM USING D-STATCOM

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ABSTRACT

The emanate use of distributed energy sources in electricity grid has created new ultimatum for the utility load as regard to power quality, voltage stabilization and efficient energy utilization. Wind and Solar are considered as the most assuring source of renewable energy. However, the standalone operation of either Photovoltaic or wind energy system does not offer a very reliable source of electricity production, mainly due to the unpredictability over the availability of the wind and solar irradiance. Thus, an assortment of wind and solar power generation structure can form a very much potential and reliable source of electricity. In this work a hybrid model of wind and Photo- voltaic system has been presented. This kind of systems very beneficial and useful to the remotely located or islanded areas where grid integration is not very economical. However, the interfacing of power electronic devices to DG systems induces very severe power quality problems, such as, harmonic generation and the reactive power compensation that disturbs the power distribution system. In this work, a simulation model of hybrid wind-PV generation system of capacity 750 KW has been presented. The performance of this system with grid connected mode is analyzed. The power quality of the wind-SPV hybrid system has been evaluated by calculating the total harmonics distortion (THD) at different wind speed. Power quality of this hybrid system has been improved by using DSTATCOM.

INTRODUCTION

Hybrid power systems are becoming increasingly popular due to their ability to provide reliable and efficient power supply to remote and off-grid areas. However, these systems are often plagued with power quality issues such as voltage sags, harmonics, and flicker. These power quality issues can cause significant problems for the operation of electrical equipment, leading to increased maintenance costs and reduced system lifespan.

VOLTAGECONTROLLEDDSTATCOM FORPOWERQUALITY IMPROVEMENT

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ABSTRACT

In this project a new technique to generate reference voltage for a distribution static compensator (DSTATCOM) operating in voltage-control mode. The proposed scheme exhibitsseveral advantages compared to traditional voltage controlled DSTATCOM where the reference voltage is arbitrarily taken as 1.0 p.u. The proposed scheme ensures that unity powerfactor (UPF) is achieved at the load terminal during nominal operation, which is not possible in the traditional method. Also, the compensator injects lower currents and, therefore, reduceslosses in the feeder and voltage-source inverter. Further, a saving in the rating of DSTATCOMis achieved which increases its capacity to mitigate voltage sag. Nearly UPF is maintained, while regulating voltage. This paper proposes a new algorithm to generate reference voltage for stage at the load terminal, during load change. The statespace model of DSTATCOM is incorporated with the deadbeat predictive controller for fast load voltage regulation during voltage disturbances. With these features, this scheme allows DSTATCOM to tackle power- quality issues by providing power factor correction, harmonic elimination, load balancing, and voltage regulation n the load requirement. Simulation and experimental results are presented to demonstrate the efficiency of the proposed algorithm.

INTRODUCTION

Voltage-Controlled Distribution Static Compensator (VOLTAGECONTROLLEDDSTATCOM) is a type of power electronics-based device that is commonly used in power systems to improve power quality. It is a shunt-connected, static compensator that is capable of compensating reactive power and mitigating voltage fluctuations in the power system.

The primary function of a VOLTAGECONTROLLEDDSTATCOM is to maintain a constant voltage at the point of connection by injecting or absorbing reactive power as needed. It

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Analysis and Designing of G+18 Tall Building Subjected To Earth Quake Load and Wind Load

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ABSTRACT

Thought of site particular parallel stacking due to wind or seismic tremor hundreds all things considered with vertical gravity masses is basic for finding the lead of the tall homes. As the tallness of a building transforms into taller, the amount of basic texture required to look up to sidelong masses increments significantly. The format of tall structures basically incorporates an applied outline, inexact appraisal, introductory design and improvement, to securely pass on gravity and horizontal burdens. The plan criteria are vitality, serviceability and human reassurance. The objective of the auxiliary specialist is to land at fitting basic plans, to fulfill those criteria. In the present research, the confine state approach of examination and design ¬of a G + 20 story fortified cement over the top ascent developing under breeze and seismic masses as reliable with IS codes of practicing is depicted. Wellbeing of the structure is checked towards suitable cutoff points recommended for rooftop relocations; base shear, between story floats and increasing velocities endorsed in codes of activity with the guide of non – direct unique assessment and diverse material references in writing on impacts of seismic tremor and twist hundreds on structures.

KEYWORDS: Displacements, Base Shear, Inter- Storey Drifts, And Accelerations, Non Linear Dynamic Analysis.

1. INTRODUCTION

1.1 General

Because of the shortage of land there has been expanded interest for arrive. So there was a monster blast inside the quantity of tall homes, each private and business and the cutting edge form is nearer to the taller frameworks. Considering the expanding people notwithstanding loss of flat development isn't a sensible answer. At that point the best response for the creating call for is the development of the multi-story structures inside the to be had arrive. The improvement of high quality concrete, higher review metallic, new creation methods and prevalent computational approach has brought about the rise of a pristine age of tall structures that are adaptable, low in damping, thin and light in weight. High upward push development has wind up a requirement for the city change. As the interest for multi-story frameworks has enhanced shockingly as an answer for the developing masses and expanded interest for the prerequisite of abiding for the duplicated populace. As the pinnacle of the shape will build the powers showing up on the shape also will increment together with the stature of the developing will expand like breeze and seismic tremor powers. The accumulation of gravity stacking over a monstrous assortment of stories in a tall building can deliver segment stacking of a request higher than the

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A New Approach for Generating Clouds from Models to Secure Cloud Storage

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ABSTRACT

Authorization is an important security concern in cloud computing environments. It aims at regulating an access of the users to system resources. A large number of resources associated with REST APIs typical in cloud makes an implementation of security requirements challenging and error-prone .To alleviate this problem, in this paper we propose an implementation of security cloud monitor. We rely on model-driven approach to represent the functional and security requirements. Models are then used to generate cloud monitors. The cloud monitors contain contracts used to automatically verify the implementation. We use Django web framework to implement cloud monitor and OpenStack to validate our implementation.

1. INTRODUCTION

In many companies, private clouds are considered to be an important element of data center transformations. Private clouds are dedicated cloud environments created for the internal use by a single organization. According to the Cloud Survey 2017, private clouds are adopted by 72% of the cloud users, while the hybrid cloud adoption (both public and private) accounts for 67%. The companies, adopting private clouds, vary in size from 500 to more than 2000 employees. Therefore, designing and developing secure private cloud environments for such a large number of users constitutes a major engineering challenge. Usually, cloud computing services offer REST APIs (REpresentational State Transfer Application Programming Interface) to their consumers. REST APIs, e.g., AWS, Windows Azure, OpenStack, define software interfaces allowing for the use of their resources in various ways. The REST architectural style exposes each piece of information with a URI, which results in a large number of URIs that can access the system. Data breach and loss of critical data are among the top cloud security threats. The large number of URIs further complicates the task of the security experts, who should ensure that each URI, providing access to their system, is safeguarded to avoid data breaches or privilege escalation attacks. Since the source code of the Open Source clouds is often developed in a collaborative manner, it is a subject of frequent updates. The updates might introduce or remove a variety of features and hence, violate the security properties of the previous releases. It makes it rather unfeasible to manually check correctness of the APIs access control implementation and calls for enhanced monitoring mechanisms. In this paper, we present a cloud monitoring framework that supports a semi-automated approach to monitoring a private cloud implementation with respect to its conformance to the functional requirements and API access control policy. Our work uses UML (Unified Modeling Language) models with OCL (Object Constraint Language) to specify the behavioral interface with security constraints for the cloud implementation. The behavioral interface of the REST API provides an information regarding the methods that can be invoked on it and pre- and post-conditions of the methods. In the current practice, the pre- and post-conditions are usually given as the textual descriptions

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Detecting Fake Accounts on Social Media Using Artificial Neural Networks

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ABSTRACT

We use machine learning, namely an artificial neural network to determine what the chances that Facebook friend request is authentic are or not. We also outline the classes and libraries involved. Furthermore, we discuss the sigmoid function and how the weights are determined and used. Finally, we consider the parameters of the social network page which are utmost important in the provided solution. The other dangers of personal data being obtained for fraudulent purposes is the presence of bots and fake profiles. Bots are programs that can gather information about the user without the user even knowing. This process is known as web scraping. What is worse, is that this action is legal. Bots can be hidden or come in the form of a fake friend request on a social network site to gain access to private information.

1. INTRODUCTION

In 2017 Facebook reached a total population of 2.46 billion users making it the most popular choice of social media [1]. Social media networks make revenues from the data provided by users. The average user does not know that their rights are given up the moment they use the social media network's service. Social media companies have a lot to gain at the expense of the user. Every time a user shares a new location, new photos, likes, dislikes, and tag other users in content posted, Facebook makes revenue via advertisements and data. More specifically, the average American user generates about $26.76 per quarter [2]. That number adds up quickly when millions of users are involved.

- In today's digital age, the ever-increasing dependency on computer technology has left the average citizen vulnerable to crimes such as data breaches and possible identity theft.
- These attacks can occur without notice and often without notification to the victims of a data breach. At this time, there is little incentive for social networks to improve their data security.
- These breaches often target social media networks such as Facebook and Twitter. They can also target banks and other financial institutions.

2. LITERATURE SURVEY

This chapter provides the details of the project's need based survey, system requirements, Hardware Requirements, Software Requirements, and System Requirements.

Project Overview:-

• Each input neuron would be a different, previously chosen feature of each profile converted into a numerical value (e.g., gender as a binary number, female 0 and male 1) and if needed, divided by an arbitrary number (e.g., age is always divided by 100) to minimize one feature having more influence on the result than the other. The neurons represent nodes. Each node would be responsible for exactly one decision-making process.

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Detection of Cyber Attack in Network Using Machine Learning Techniques

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ABSTRACT

In contrast to the past, advancements in personal computer and communication technologies have brought about significant changes. Although using new technology gives individuals, organisations, and governments enormous benefits, some people are messed up against them. For instance, the safeguarding of important data, the safety of information transfer channels, the availability of information, and so on. In light of these problems, digital oppression motivated by fear is one of the biggest problems we face today. Digital dread, which caused a lot of problems for individuals and organisations, has reached a point where it might compromise national and open security due to many groups, including the criminal underworld, professionals, and digital activists. As a result, Intrusion Detection Systems (IDS) were developed to keep a strategic distance from online attacks. Currently, learning the Support Vector Machine (SVM) computations were used to distinguish port sweep efforts based on the new CICIDS 2017 dataset with 97.80%, 69.79% accuracy rates were achieved separately. SVM may be replaced with alternative algorithms like random forest, convolutional neural network (CNN), and artificial neural network (ANN), which have higher accuracy than SVM (93.29, 63.52, 99.93, and 99.11, respectively).

1. INTRODUCTION

1.1 ABOUT THE PROJECCT

In contrast to the past, advancements in personal computer and communication technologies have brought about significant changes. Although using new technology gives individuals, organisations, and governments enormous benefits, some people are messed up against them. For instance, the security of storage areas for sensitive information, information accessibility, and so on. In light of these problems, digital oppression motivated by fear is one of the biggest problems we face today. Digital dread, which caused a lot of problems for individuals and organisations, has reached a point where it might compromise national and open security due to many groups, including the criminal underworld, professionals, and digital activists. As a result, Intrusion Detection Systems (IDS) were developed to keep a strategic distance from online attacks. Currently, learning the support support vector machine (SVM) calculations were used to distinguish port sweep efforts based on the new CICIDS2017 dataset with 97.80%, 69.79% accuracy rates were achieved separately. We may use various algorithms in place of SVM, such as random forest, CNN, and ANN, which can achieve accuracy values of SVM 93.29, CNN 63.52, Random Forest 99.93, and ANN 99.11.

1.2 MOTIVATION

Although using new technology gives individuals, organisations, and governments enormous benefits, some people are messed up against them. For instance, the security of storage areas for sensitive information, information accessibility, and so on. In light of these problems, digital oppression motivated by fear is one of the biggest problems we face today. Digital

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Finding of Vitamin Deficiency and Food Recommendation System Using Multiple Classifier Algorithms

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ABSTRACT

The World Health Organization (WHO) has shown that a lack of or uneven intake of food contributes to roughly 9% of heart attack fatalities, 11% of ischemic heart disease deaths, and 14% of gastrointestinal cancer deaths globally. More than a billion individuals are anemic due to iron deficiency (anaemia), 0.25 billion children have vitamin deficiencies ranging from vitamin A to vitamin K inadequacy, and 0.7 billion are iodine deficient, making a total of roughly 0.25 billion people anaemic. Diet recommendations are the primary goal of this study. The recommender system has to cope with a significant amount of data from the dataset in order to find relevant recommendations. In this project own data set is prepared based on various high and low values of vitamins from (vitamin a , b,c,d,e,k) and features are divided from normal and abnormal conditions of vitamins and labels are divided in to o and 1 as normal and abnormal. Another dataset is prepared based on combination of various vitamins and their deficiency and food to be recommended based on which vitamin is deficient. In this project multiple classifier algorithms are used (knn, decision tree, random forest, logistic regression, voting classifier) ensembled algorithm is used to combine multiple algorithms and train a new algorithm. Accuracy of each algorithm is calculated and best algorithm is used for prediction purpose. Prediction is shown using flask web application which will detect deficiency of vitamin and recommend type of food to be taken on various combinations.

1. INTRODUCTION

When it comes to health issues, today's human beings are dealing with anything from a lack of physical fitness to mental issues. Numerous studies show that poor eating is a key contributor to a wide range of health problems and illnesses. The Globe Health Organization (WHO) found that malnutrition is responsible for 9 percent of all heart attacks, 11 percent of all deaths from ischemic heart disease, and 14 percent of all deaths from gastrointestinal cancer in the world. Vitamin A insufficiency affects 0.25 billion children, anaemia affects 0.2 billion individuals, and iodine deficiency affects 0.7 billion people worldwide. The main objective of this work to recommend a diet to different individual. As a result, the recommender system has to deal with a lot of data, but it does so by focusing on the information that is most relevant to the user, depending on the information they offer and other variables. Users and objects are matched based on physical characteristics (age and gender, height and weight, body fat percentage), preferences, and other factors (weight loss or weight gain). The information gathering phase, the learning phase, and the recommendation phase make up the three main parts of the recommendation process. Information concerning a certain issue is gathered initially, then potential solutions to that problem are grouped together. After the collection of information Learning Phase comes in which various conclusions are made out of that information which is gathered and in last phase i.e., Recommendation Phase an output is given in which various recommendations are

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Image Processing and Machine Learning for Human Stress Detection

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ABSTRACT

The major goal of this study is to use vivid Machine Learning and Image Processing methods to identi-fy stress in the human body. Our system is an upgraded version of previous stress detection systems that did not include live detection or personal counselling, but this system includes live detection and periodic analysis of employees, as well as detecting physical and mental stress levels in them and providing proper stress management remedies via a survey form. Our method is primarily focused on stress management and cre-ating a healthy and spontaneous work environment for workers in order to get the most out of them during working Hours.

KEYWORDS: Facial Expressions, K-Nearest Neighbor Classifier, Stress, Stress Prediction

1. INTRODUCTION

Stress management systems are neces-sary for detecting stress levels that affect our socio-economic situation. According to the World Health Organization, stress is a mental health disorder that affects one out of every four people (WHO). Mental and financial troubles, as well as a lack of clarity at work, bad working relationships, despair, and, in extreme situations, death, are all symptoms of human stress. This necessitates the pro-vision of therapy to help stressed people manage their stress. While it is impossi- ble to totally eliminate stress, taking preventative measures may help you cope. Only medical and physiological peoples can now deter- mine whether or notsomeone is de-pressor (stressed). A questionnaire is one of the most used methods for detect-ing stress. This technique relies primari-ly on individual responses; people will be hesitant to communicate whether or not they are worried. Automatically de-tecting stress lowers the likelihood of health problems and improves society's well-being. This involves the creation of a scientific approach for assessing stress levels in people using physiological markers. Since stress is such a signifi-cant societal contribution, a variety of approaches for detecting it have been investigated. It enhances people's quality of life, according to Ghaderi Tal. Stress was assessed using data from respira-tion, heart rate (HR), face electromyog-raphy (EMG), Galvanic skin response (GSR) foot, and GSR hand, and with the finding that parameters related to the respiratory process are critical in stress detection. Maria Viqueira et al. present a method for anticipating mental stress that relies only on GSR as a physiologi-cal sensor and uses a standalone stress detecting device. Electrocardiograms alone were utilized by David Liu and colleagues to predict stress levels (ECG). The effectiveness of multimodal sensors in detecting stress in working individuals is investigated experimental-ly. Sensor data from pressure distribu-tion, heart rate, and blood volume pulse (BVP), and electro dermal activity is used in this investigation (EDA). In ad-dition, an eye tracker sensor is used, which analyses eye movements in con-nection with stressors such as the Stroop word test and information regarding pick-up tasks. Nowadays, the IT industry is creating a new standard in the market by introducing new technology and goods. Employee

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Low-Cost and Energy-Efficient Security System Using Passive Infrared Sensor (Ir)

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ABSTRACT

This project introduces a passive Infrared sensor "IR" based security system. We can save power and manage effectively using this sensor at a low cost and with a little amount of memory space. The IR sensor detects changes in infrared radiation levels when an intruder or human passes through the system or location where it is installed. Depending on the change in radiation levels, voltages fluctuate, and with this voltage, the signal is amplified, and therefore sound is created. As a result, it is useful in a variety of applications and fields. When compared to the current system, this type of technology has numerous advantages. The term IR sensor refers to a passive infrared sensor. The primary ideology is one of security. This is based on an IR sensor and an IC that generates a siren or buzzer sound. The IR sensor detects the infrared radiation generated by humans and generates a digital result. It is most commonly found in motion detectors, security alarms, and automatic lighting applications. They detect movement by changing the amount of infrared radiation. This digital output is then sent to the Arduino Uno.

KEYWORDS: Internet of Things, Infrared Communication, Arduino.

1. INTRODUCTION

IR motion detectors are one of the most common types of security devices. Passive IR motion detectors are often designed to send an SMS alert to a mobile phone or to an alarm panel in response to detecting IR that indicates the object is moving. The alarm system is in response to receiving the breach indicator, an alarm condition is triggered. When a human or motor vehicle enters a monitored area, IR motion detectors are typically used in conjunction with indoor or outdoor lighting to switch on a light in response to a person moving in the motion detector's field of view. When someone enters a secure area, an SMS is immediately sent to the corresponding people. People can understand what is going on in the host area. When the owner is in a remote location, they get messages to the host section via SMS and can examine all information about the host section photographs via mobile phone. People can comprehend what is happening in the host location. When the owner is in a faraway place, they receive SMS messages to the host section and may view all information about the host section images on their mobile phone. An embedded access control system that is efficient, low in power consumption, and low in cost. Smart home security and remote monitoring based on motion detection are critical for a wide range of commercial and security applications. Many countries are gradually implementing intelligent home security control systems. Microprocessors are now found in the majority of home and workplace products with which we interact. All of these appliances have some sort of user interface, yet many customers are dissatisfied by the complexity of accessing their equipment' sophisticated functionality. We are working on a framework that will allow people to interact with appliances using a separate user interface device that they already own. Since they are generally accessible and have connectivity features that enable them to connect to appliances, smart phones are

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Magnitude Estimation of Earthquake Early Warning Using Machine Learning

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ABSTRACT

To help earthquake early warning (EEW) systems make quick decisions, we build a random forest (RF) model for rapid earthquake localization. This system computes the differences in P-wave arrival timings between the first five stations to record an earthquake as a reference station (i.e., the first recording station). The RF model categorises these differential P-wave arrival times and station locations in order to determine the epicentral position. Using a Japanese earthquake catalogue, we train and evaluate the suggested algorithm. The Mean Absolute Error (MAE) of the RF model, which forecasts earthquake sites, is 2.88 km. Importantly, the suggested RF model can learn from little data—10% of the dataset—and a lot fewer recording stations—three—and yet get good results (MAE5 km). The approach provides a potent new tool for quick and precise source-location prediction in EEW since it is accurate, generalizable, and responsive.

1. INTRODUCTION

1.1 Brief Information

Earthquake hypocenter localization is crucial to seismology and is important for a number of applications, including tomography, source characterisation, and hazard evaluation. This emphasises the need of creating reliable seismic monitoring systems for pinpointing the timings and places of the event's genesis. A key but difficult job for creating seismic hazard reduction tools like earthquake early warning (EEW) systems is the quick and accurate classification of active earthquakes. Even though traditional techniques have been extensively used to develop EEW systems, it is still difficult to determine hypocenter locations in real-time because of the little data available during the early stages of earthquakes. Timeliness is one of the many important aspects of EEW, and more work is needed to further enhance the hypocenter location estimates using only data from the first few seismograph stations that are activated by the ground shaking and the first few seconds following the arrival of the P-wave. In this paper, we present a differential P-wave arrival time and station location-based RF-based approach to find earthquakes. Only P wave arrival timings found at the first few stations are used in the proposed method. For EEW warnings to spread quickly, it must react quickly to earthquake first arrivals. By including the source-station locations into the RF model, our method implicitly takes the effect of the velocity structures into account. We assess the suggested method using a comprehensive Japanese seismic catalogue. Our test findings demonstrate that the RF model can effectively pinpoint earthquake areas with little data, which offers fresh insight on creating effective machine learning. We use the suggested network to solve a Japanese earthquake detection issue. We base our findings on a comprehensive catalogue provided by the Japan Meteorological Agency, the National Research Institute for Earth Science and Disaster Resilience, and other organisations. Between January 1st, 2009, and November 11th, 2020, the Hi-net seismic network collected 2,235,159 regional seismic events, which are included in this extensive catalogue. [W]

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Secure Data Sharing and Searching At the the Edge of Cloud Assisted Iot

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ABSTRACT

Smart gadgets can now communicate from close to a long distance with one another and with the Internet or cloud. As a result, the Internet of Things represents a brand-new paradigm (IoT). However, by employing cloud computing, resource-constrained IoT smart devices can gain a number of advantages, such as offloading the burden of data processing and storage to the cloud.Working at the network's edge offers more advantages than using the cloud for IoT applications that require high data rates, mobility, and latency-sensitive real-time data processing. we suggest a productive data-sharing system that enables smart devices to safely communicate data with others at the edge of cloud-assisted IoT .we analyze the performance based on processing time of our proposed scheme. Because security-oriented operations will increase the heavy computational burden, IoT's resource-constrained smart devices cannot handle these computation-intensive operations.

KEYWORDS: Servers,Smart devices,Cloud computing,Internet of Things,Encryption,Public key,edge computing,extreme edge.

1. INTRODUCTION

The Internet of Things (IoT) is viewed as a future internet that will connect all different types of physical, smart objects in the actual world. On the other hand, cloud resources are scalable, on-demand, and nearly limitless in terms of storage and processing capacity. IoT smart devices can therefore lessen the load of scarce resources with the aid of the cloud. Smart devices need low latency, high data rates, quick data access, real-time data analytics/processing with decision making, and mobility support in order to run IoT applications. The cloud is unable to satisfy the aforementioned standards due to a number of shortcomings. However, edge computing enhances cloud-as in many ways. The Internet of Things (IoT) will enable developed smart and autonomous cyber-physical environments in the areas of-smart grids,smart cities, smart homes, smart medical and healthcare systems, wearable technologies,transportation systems, etc. By connecting these billions of smart devices to the Internet. However, because the majority of these devices are a part of a vast platform, a significant amount of data is produced, necessitating strong computational capabilities for efficient and secure data storage, processing, and analysis. But keeping data processing, communications, and storage operations on edge servers that are close to the devices at the edge of the networks. IoT is persisted and fulfills the aforementioned needs the edge servers can act as a middleman for communications across large distances because smart gadgets have a restricted range of connectivity. Any personal or mobile device, standalone server, or network device that is hosted just one hop away from the end devices is considered an edge server. In addition, cloud servers and edge servers work together and have close connections. Data sharing is made available within cloud-aided IoT applications due to the rise in the number and accessibility of smart devices.

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Securing Hospital Data with Block Chain and Ai

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ABSTRACT

It presents a model of multi-client structure for access-control to datasets set away in an unfrosted cloud circumstance. Dispersed amassing like some spare un-trusted circumstance needs the facility to check share-data. Our way of thinking gives a section request over the dataset away in the-cloud without the trader interest. The basic device of access control fragment is ciphertext-blueprint AES plot with dynamic-properties. consume a blockchain based decentralized-record, our structure gives steady record of all critical security-occasions, key age, acquire the chance to approach errand, change, find the prospect to ask for. We advise a lot of crypto-graphic shows guaranteeing affirmation of crypto graphic activities-requiring riddle.

KEYWORDS: Cloud Storage; Attribute-Based Access Control; Ciphertext-Policy Attribute-Based Encryption; Advance Encryption Standard; Blockchain.

1. INTRODUCTION

Prior to couple of years, organization to remotely store and coordinate customer data on cloud-based organizations have extended. A lot of-customers store their records in fogs. Overall, there are a couple of security issues and copyright perspective. The basic issue is moving data to the outside condition, with the true objective that some other entity aside from the owner can pick up induction to information. Of course, it is difficult to give up to the different workplaces that offer organizations to data storing: fortification records. This thesis presents a model of multi-customer structure for access-control to datasets present in an entrusted cloud condition. Conveyed stockpiling like some added untrusted circumstance needs the facility to confirm share information. Our strategy gives a route in control over the data present in the cloud without the provider participation. The typical mechanical assembly of access-control instrument is ciphertext-approach ABE conspire with dynamic characteristics. Using a blockchainbased decentralized evidence, our structure gives constant log of all critical security events, for instance, get to system assignment, change or denial.As of now, there are not all that numerous instruments and strategies to secure information put away on cloud servers and in the meantime giving apparatuses to an agreeable administration. A few utilities propose to encode singular documents before sending to the cloud, for example "BoxCrypt" [1]. There are additionally different apparatuses for creating secure web applications with access to databases, such as «CryptDB» [2], «ARX» [3]. They utilize diverse encryption plans, distinctive way to deal with their utilization.

There are intends to guarantee the uprightness and non-disavowal, their task dependent on blockchain use. Specifically, "BigchainDB" [4] is intended for dispersed distributed storage of data with an ensured affirmation of its honesty and non-disavowal. The remainder of the paper is composed as pursues. In segment 2 we portray the idea of the venture framework and the fundamental points of interest of the picked methodology. Further, in segment 3 the chosen plan of characteristic based encryption and adjusting it. Segment 4 portrays the stages

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Smart Artificial Intellegence Based Online Proctoring System

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ABSTRACT

From the past year, Online Examination has become most popular in all the educational fields due to covid-19 However, the institutions are facing a big difficulty in terms of proctoring methods. If the way we are living is to be the new normal then there is a need to find some solution. In this project, we have proposed a solution that to develop an AI-based integrated system that can helps to preventing cheating in examinations and we present some techniques and tools through which the proctor need not to be present throughout the exam. Our AI-based model will be able to detect any unfair in an examination.

KEYWORDS: Proctoring System, Online Tests, Remote Learning, Convolutional Neural Network, Haar Cascade Local Binary Pattern Histogram Algorithm.

1. INTRODUCTION

In India, the number of internet users has nearly doubled in the past 6 years. This proved to be a boon for academics as many students could continue their education. This also facilitated examinations to go online which brought the concept of online proctoring at the academic level. A proctored exam allows the invigilators to invigilate remotely. They use video, audio, and various anti-cheating features to maintain the exam's credibility. Manual online proctoring in the remote examination is a difficult task as many students cannot be invigilated at the same time. During this a teacher can physically monitor students using all the senses, so the idea is to create an AI system that will monitor the student with the webcam and microphone and with that teacher can monitor many students at a time. The system should also keep a record of probable malpractices. Here comes an online proctored exam. This tool helps educational institutions monitor the examination process, preventing any type of cheating. Many online examination providers are using artificial intelligence enabled technologies to proctor tests objectively. These advanced methods involve audio and video access techniques to ensure the candidates do not indulge in any cheating behavior.

The objective of Remote Proctoring software is to supervise students while conducting exams. Thus, developing computer algorithms to Identify students cheating. Student camera access is taken then monitor them for unfair practices. Then AI function is involved. And it helps to find candidates to monitor closely. Online proctoring enabling candidates to take exams from any location. The proctored exam software is used during online proctoring to allow students and proctors to take exams at any place. It must be sufficiently reliable and internet connected. Proctoring an online exam is no longer difficult. A good remote online proctoring system should facilitate movement and sound detection. It must be sufficiently reliable and internet connected. Proctoring an online exam is no longer difficult.

2. LITERATURE REVIEW

In paper [1] online education is helping students and institutions worldwide to access knowledge base of wide variety. This form of learning and education is increasing rapidly

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Smart Assistant for Visually Impaired Using Yolo Model

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ABSTRACT

The suggested system finds web-based things. By tracking an object's location, the camera captures each frame and notifies the user of its movement. A voice is heard when movement of an object is noticed. For the purpose of directing the blind person, an object alarm is produced. The object detection model for YOLO. Deep neural networks are used in this to learn and detect objects. Although the prevalence of blindness and visual impairment due to numerous diseases has significantly decreased, there are still many people who are at risk for age-related visual impairment. Most navigational skills rely on visual information, thus those who are blind or visually impaired are at a disadvantage since they lack access to this crucial information about their surroundings. Recent developments in inclusive technology make it possible to increase the assistance provided to those with vision impairments while they are moving around. In this context, we suggest a Smart Vision system, whose goal is to enable blind users to move around in unfamiliar environments—whether indoors or outdoors—through a user-friendly interface.

KEYWORDS: Visually Impaired People, Deep Learning, Object Detection, Obstacle Detection, Yolo Model.

1. INTRODUCTION

1.1: Inspiration

Creating visual aids for the disabled is one of the most active computer vision research initiatives. Mobility aids are designed to increase the user's awareness of their environment and appreciation of the items nearby. These aids are necessary for precise navigation in an environment defined by a user-relative Coordinate system. an explanation of how visual replacement techniques work.

1.1. 1 : Issue Statement

The number of persons with visual impairments is estimated to be 285 million, of which 246 million are losing their visual acuity and 39 million are blind. Most blind or visually handicapped people reside in underdeveloped nations. In Tunisia, 30,000 blind people have been identified. The number of persons with visual impairments is estimated to be 285 million, of which 246 million are losing their visual acuity and 39 million are blind. Most blind or visually handicapped people reside in underdeveloped nations.30, 000 people with visual impairment have been found in Tunisia.

1.2 Project's Objective

Many people still run the risk of age-related vision loss despite a significant decline in the prevalence of various diseases that lead to blindness and visual impairment.

People who are blind or visually impaired are at a disadvantage because they are unable to access essential information about their surroundings because the majority of navigational skills rely on visual information. Thanks to recent developments in inclusive technology,

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Using Attribute-Based Data Sharing To Improve Cloud Computing Security and Privacy

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ABSTRACT

Data sharing is a handy and financial provider provided via cloud computing. Data contents privateness additionally emerges from it when you consider that the facts is outsourced to some cloud servers. To shield the precious and touchy information, more than a few methods are used to decorate get admission to manipulate on the shared data. In these techniques, Ciphertext-policy attribute-based encryption (CP-ABE) can make it extra handy and secure. Traditional CP-ABE focuses on information confidentiality merely, whilst the user's non-public privateness safety is a vital trouble at present. CP-ABE with hidden get entry to coverage ensures records confidentiality and ensures that user's privateness is no longer published as well. However, most of the present schemes are inefficient in verbal exchange overhead and computation cost. Moreover, most of these works take no consideration about authority verification or the hassle of privateness leakage in authority verification phase. To handle the troubles stated above, a privateness maintaining CP-ABE scheme with environment friendly authority verification is delivered in this paper. Additionally, the secret keys of it acquire consistent size. Meanwhile, the proposed scheme achieves the selective safety underneath the decisional n-BDHE trouble and decisional linear assumption. The computational effects affirm the deserves of the introduced scheme.

INDEX TERMS: Attribute-Based Encryption (ABE), Authority Verification, Hidden Access Policy, Privacy Preserving.

1. INTRODUCTION

Cloud methods make it viable to make use of statistics science sources into commercial enterprise domain. The cloud presents range of scalable offerings on-demand, such as on-line databases, software interface, storage and computing resources, etc. Users can reap offerings thru phones, laptops, and computers. Cloud storage presents far off facts storage and administration services. It is additionally useful in records examining and computing, which is pretty easy as it can grant a variety of offerings at the equal time. Cloud has many blessings in information storage, such as lowering conversation fee and preservation charge, saving resources, permitting far flung access, and so on. However, humans may now not be inclined to keep their information in the cloud, even even though it offers so many advantages due to the fact of the records confidentiality and privateness problems. The cloud server (cs) may also be untrusted, in different words, if records is uploaded to cloud, the cloud provider issuer might also acquire and expose users' non-public privacy, and even get entry to and share the records illegally [1]. To make certain the confidentiality of the facts in cloud, human beings are inclined to encrypt them earlier than they are uploaded to cloud. But the prevalent encryption algorithms make the statistics technique emerge as difficult. Abe is a precise candidate to overcome this limitation. Abe was once first proposed in 2005 with the aid of sahai and waters [2], which assured the information confidentiality and furnished the fine-

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Advanced Security System Using Raspberry PI

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ABSTRACT

Security is the primary concern everywhere and for everyone. Every person wants their home, industry etc to be secured. This project describes a security system that can monitor an industry and home.This is a simple and useful security system and easy to install. Here our application uses Raspberry Pi as its controller and passive infrared sensor which detects the presence of a person wherever we place this module either at a door near home or at offices, factories or any other place where we need monitoring every minute for the purpose of security.

PIR sensor detects the movement around the sensor to activate the webcam to capture a picture. If the suspicious object is detected, then the alarm is activated and sends the images to cloud through IOT to warn the house owner about the existence of the intruder. so that one can have the knowledge of the person who appeared at that instant. A buzzer rings to alert surrounding people in that case.

1. INTRODUCTION

1.1 Introduction

Today technology plays a vital role in our daily life. There is rapid growth in technology in the field of security systems .The term motion detection is becoming very common in the present scenario when and where the safety and security are playing a key role in supervising and also these systems slowly becoming a part of many locations including traffic areas, shopping malls, institutions and several organizations and even it is also used for home security. A raspberry pi security camera system can have many benefits such as reduced theft, protect employees, building security, remote monitoring of the facility from Smartphone or tablet, deter trespassers from attempting to gain access to the facility. The problematic surveillance system or CCTV camera is costly because of the use of many expensive components like computers, cameras, and cable. Also, we need a hard disk with higher capacity to save video. It reserves too much space for continuous recording and requires manpower to detect the unauthorized activity.

In the raspberry pi security system, the camera captures images of the person whenever PIR senses the presence of an individual and our controller sends those images to the pre-stored cloud through a computer network. in order that one will have the data of the person appeared at that instant. A vibration detector is additionally connected to spot if somebody tries to open the door and a siren is given to alert encompassing folks in this case. Unlike the problematic surveillance system, raspberry pi security system is of low cost and also has additional features such as alerting the owners by sending pictures to the cloud. In this system the email notification feature helps the user to see what is wrong than to see the entire video to find the error. The Raspberry Pi system is not only user friendly it also enables an individual with medium knowledge to assemble the system if the necessary raw material is available and by creation of some extra files to support the operating system to store the data. So they are not only a money saving project but also a efficient security system.

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Contactless Temperature Monitoring and Mask Scan Entry System for Covid Prevention Using Raspberry PI

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ABSTRACT

Currently humans are employed for temperature screening and mask identification in public places to prevent the spread of COVID-19. We have temperature testing systems for all scanning entrances, but manual temperature scanning has numerous drawbacks. The staff isn't well-versed in the use of temperature scanners. When reading values, there is space for human error. People are often allowed entry despite higher temperature readings or the lack of masks. For large crowds, a manual scanning device is ineffective. Hence there arises a need to have an automatic system that checks for temperature and mask. We propose a fully automated temperature scanner and entry provider system to solve this issue. The system uses a contactless temperature scanner and a camera to capture image. If a high temperature or the absence of a mask is observed, the scanner is connected to a gate like structure that prevents entry. To monitor the entire process, the device uses a temperature sensor and camera connected to a Raspberry Pi system. The main theme of this paper is to automate the entire covid scanning process for reducing risk of spread COVID-19 in highly crowded places such as malls, schools and colleges.

1. INTRODUCTION

The main aim of the project is to build a Raspberry pi based safety device for covid-19 safety rules to reduce the disease spread. We focus on most common indoor measurement system to allow the people. This project makes a use of MLX90614 contactless temperature sensor to detect the body temperature and pi camera, deep learning in that we are using Tensorflow to detect the mask whether the person is wearing a mask or not. We introduce an affordable COVID-19 indoor safety system. All modules and sensor are interfaced to the raspberry pi3 processor.

The temperature sensor measures person's temperature using contactless IR sensor. The persons pass one by one. In case that person's temperature exceeds average human body, and then raspberry pi3 processor generates signal to lock the door and gives the audible alert through buzzer. Otherwise, the door is opened to let the person in.

For implementation of mask detection using pi camera interfaced to the Raspberry Pi and deep learning. When the user switches on the kit then pi camera capture the images, In case that image does not contain mouth and nose, it means that person wears mask properly and corresponding door will be opened. However, if the person not wear a mask then raspberry pi3 processor generates signal to lock the door and send the mail to the respective person also gives the audible alerts through buzzer

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Digital Door Lock System Using Arduino and Bluetooth Module

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ABSTRACT

The aim of this project is to provide the security. Now a days security system is must for every organization. Access control system is one system that is used for security purpose in many organizations. The main aim of this project is to provide access only if the password of particular user is matched and the access is denied to unauthorized persons. These kinds of doors with secret code locking systems are quite useful for the security purposes. Many departments like Defense, military areas, Research canters, bank security and security for important documents Industries, go-downs, etc can adopt this type where high level security is essential. The same system can be used even at domestic side also; the main advantage of this system is that only authorized persons can operate these doors. This system has intelligence of allowing only valid password. A password in the form of four digits code is offered to the operator, if the correct code is entered through the keyboard of the Bluetooth, then the door will be opened automatically. If the password is wrong, then a message is sent to the authorized mobile through the Bluetooth and buzzer is also activated. It also has the push buttons mechanism through which the user can enter the correct pattern using the push buttons ,if it is correct password then the door opens else a message is sent to the device which is in range of Bluetooth module(HC05) and also the buzzer gets activated.

1. INTRODUCTION

1.1 Introduction To The Project:

The aim of this project is to provide the security. Now a days security system is must for every organization. Access control system is one system that is used for security purpose in many organizations. The main aim of this project is to provide access only if the password of particular user is matched. So, that access is denied to unauthorized persons.

These kinds of doors with secret code locking systems are quite useful for the security purposes. Many departments like Defense, military areas, Research centers, bank security and security for important documents Industries, go-downs, etc, can adopt this type where high level security is essential. The same system can be used even at domestic side also; the main advantage of this system is that only authorized persons can operate this door.

This system has intelligence of allowing only valid password. A password in the form of four digits code is offered to the operator, if the correct code is entered through the keyboard of the Bluetooth, then the door will be opened automatically. If the password is wrong, then a message is sent to the authorized mobile through the Bluetooth and, buzzer will be activated

This system also has intelligence of allowing valid password through physical keypad. A password in the form of four digits code is offered to the operator, if the correct code is entered through the keyboard (4 keys), then the door will be opened automatically. If the password is wrong, buzzer will be activated

Both physical and Bluetooth verification is provided in order to provide accessibility to the user, all the users have to install particular software if only Bluetooth facility is available. So, in order to surpass this obstacle, we are using physical keypad

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Earthquake Detector Using Arduino

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ABSTRACT

Earthquake early warning efforts aim to detect earthquakes and provide seconds of warning for surrounding populations. Here a working module rapidly detecting and characterizing earthquakes with the Quake-Catcher Network (QCN), which connects low- cost Micro Electro Mechanical Systems (MEMS) accelerometers to a volunteer network of an embedded system is designed.

Large magnitude earthquakes may cause significant losses of life and property. The concept is to detect the vibrations or jerks in the Earth, raise the alarm and alert the people. This concept can be proved practically with MEMS accelerometer mechanism. A method is described in the present disclosure which includes detecting of a seismic movement by an accelerometer (MEMS).

This mechanism can be installed under the ground or over the concrete base and if there is any jerk in the ground, the sensor (MEMS) will be deviated from its position. Now this sensor depending on the deviation of the angle, it gives the voltage variation. The output voltage variation from the sensor is fed to the ADC pin of the Arduino for converting it into digital data. This digital information is read by the controller that checks with the predetermined threshold, and activates through the speaker as an acknowledgement to the surrounding people and simultaneously this information is also displayed in the LCD as well that is interfaced to the Arduino controller.

1. INTRODUCTION

1.1 Project Overview

The main aim of the project is to provide alerts about earthquake before it comes by using the MEMS technology. The MEMS Sensors, having the X and Y coordinates which are used for sensing the movements in all directions, are used to find out the disturbance i.e., movement in all the directions. When the MEMS identify any of the movements, it gives information to a microcontroller. The microcontroller will automatically gives a warning message by activating the alarm as an acknowledgement and the information will also be displayed in the digital display (LCD).

Rapid detection and characterization of earthquakes can provide nearby populations with seconds of earthquake early warning (EEW) prior to strong shaking. Regional EEW systems have been proposed, tested, or implemented in relatively few regions, including California, Japan, Mexico, Taiwan, and Turkey. Rapid earthquake detection is primarily limited by the high costs of instrumentation and required infrastructure. Japan has the most developed EEW system, with over 1000 traditional seismic stations spaced at ~20 km intervals. The Japanese system recently issued a successful alert during the 11 March, 2011 Mw9 Tōhoku, Japan earthquake.

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LED DICE USING ARDUINO

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ABSTRACT

This project demonstrates the usage of random function with LED dice using an Arduino. In this project LEDs are used to represent the face of a Dice. To create all the six faces of a dice, we need 7 LEDs. A push button is connected to the ground with a resistor. All the cathodes of the LEDs are connected to the ground with resistors. LEDS are then connected to the Arduino to facilitate the requirement.

The Arduino is connected to the ground. Finally, the button is connected the 5v of Arduino, the pin 6 of Arduino is connected to the button. A code is given to the Arduino IDE to give the output as per the requirement. When the code is executed, the output will be random outputs which are given to the LEDs, so that they glow randomly resembling a Dice.

1. INTRODUCTION

The main objective of this project is to demonstrate the usage of Random function using an Arduino. The random function is displayed in the project through an LED dice. Dice are small, throwable objects with marked sides that can be positioned in a variety of ways. They are widely used in tabletop games such as dice games, board games, role-playing games, and games of chance to generate random numbers.

A typical die is a cube with a different number of dots (pips) on each of its six sides, ranging from one to six. When tossed or rolled, the die comes to a stop on its upper surface, displaying a random integer from one to six, with each value being equally probable. Dice may also have polyhedral or irregular shapes, as well as numerals or symbols on their faces instead of pips.

Arduino is a software development platform that enables you to build computers that can feel and monitor more of the physical world than a traditional desktop computer. Arduino boards can read inputs such as light on a sensor or a finger on a button and convert them to outputs such as turning on an LED or triggering a motor.

A dice is a small throwable object with multiple resting positions, used for generating random number. This makes dice suitable as gambling devices for games like craps, or for use in non-gambling tabletop games.A traditional die is an often rounded cube, with each of its six faces showing a different number. The design as a whole is aimed at the die providing a randomly determined integer from one to six, each of those values being actually likely.

A variety of similar devices are also described as dice; such specialized dice may have polyhedral or irregular shapes and may have faces marked with symbols instead of numbers. They may be used to produce results other than one through six. Loaded and crooked dice are designed to favor some results over others for purposes of cheating or amusement

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Smart Street Light Based on Vehicle Detection

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ABSTRACT

The main objective of this project is to develop an embedded system which switches or turn ON the light by detecting the vehicles on the road for energy saving of street light.Whenever IR sensor is detected it just indicates the Arduino to switch on the street lights. Then lights are switched on till the vehicle leaves and switches off automatically.Another way to this approach is, one can maintain minimum intensity without completely switching off the lights by using PWM and switch them on to maximum intensity whenever it detects the vehicle. But in this article the circuit is designed in such a way that lights are completely switched OFF and will be switched ON only when there is any vehicle.

This device can also be used for turning on and turning off the street lights based on the climate of the weather. When it is day the street lights automatically gets turned off by detecting the sun rays i.e High intensity. Whenever the sensor finds the low intensity i.e night time it automatically turns on the street lights. Based on the intensity the brightness of the light also varies using PWM. So it can be used for multiple purposes with the slight changes in it.

1. INTRODUCTION

1.1 Introduction To Smart Street Light Based On Vehicle Detection

Automation plays an increasingly very important role in the world economy and in daily life. Automatic systems are being preferred over any kind of manual system. We can also call it an "SMART STREET LIGHT SENSING". Intelligent light sensing refers to public street lighting that adapts to movement by pedestrians, cyclists and cars. Intelligent street lighting, also referred to as adaptive street lighting, dims when no activity is detected, but brightens when movement is detected. This type of lighting is different from traditional, stationary and illumination, or dimmable street lighting that dims at pre-determined times.The research work shows automatic control of streetlights as a result of which power is saved to some extent. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist the users with muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well. Basically, street lighting is one of the important parts. Therefore, the street lamps are relatively simple but with the development of urbanization, the number of streets increases rapidly with high traffic density. There are several factors need to be considered in order to design a good street lighting system such as night-time safety for community members and road users, provide public lighting at cost effective, the reduction of crime and minimizing it is effect on the environment. At the beginning, street lamps were controlled by manual control where a control switch is set in each of the street lamps which is called the first generation of the original street light. After that, another method that has been used was optical control method done using high pressure sodium lamp in their system. Nowadays, it is seen that the method is widely used in the country.

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Voice Based Hot Cold-Water Dispenser System Using Raspberry PI

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ABSTRACT:
This system is fully based on voice sensor, which uses Raspberry Pi circuit, this water dispenser system also uses IR sensor, voice sensor, mic, jars for storing water, pipes and motor. In this project the voice is detected by the voice sensor, then the sensor sends the respective information to the microcontroller, to understand whether the water required by the person should be hot or cold. The microcontroller processes the information to the IR sensor to determine where the glass is placed below the pipe or not. The system uses IR sensors to detect the presence of water glass and then the IR sensor sends the signal to the microcontroller about the presence of the glass, accordingly the motor starts and the water flows though the pipes from the particular jar(hot/cold). If the glass is not placed, the sensor sends respective signal to the motor, which does not cause the water to flow through the pipe until the glass is placed. This system can be used at home, offices etc. to get hot or cold water by just giving voice command.

1. INTRODUCTION

1.1 Introduction:

Nowadays, we have remote controls for our television sets and other electronic systems, which have made our lives really easy. Have you ever wondered about home automation which would give the facility of controlling tube lights, fans and other electrical appliances at home using a remote control? Off-course, yes! But, are the available options cost effective? If the answer is No, we have found a solution to it. We have come up with a new system called voice-based automation using Bluetooth. This system is super-cost effective and can give the user, the ability to control any electronic device without even spending for a remote control. This project helps the user to control hot cold-water dispenser using his/her voice command to smartphone. Time is a very valuable thing. Everybody wants to save time as much as they can. New technologies are being introduced to save our time. To save people's time we are introducing hot cold water dispenser system using Raspberry pi.
This system includes series of many functions like cooling and heating process, voice-based controlling, maintaining temperature and controlling flow of water and also displaying temperature.

This system is fully based on voice commands sends from mobile Bluetooth to controller. This water dispenser system also uses IR sensor, solenoid valve, jars for storing water, pipes and water heater. In this project the voice is detected by the smartphone, and then the smartphone sends the respective information to the microcontroller via Bluetooth, to understand whether the water required by the person should be hot or cold. The microcontroller processes the information to the IR sensor to determine where the glass is placed below the pipe or not. The system uses IR sensors to detect the presence of water glass and then the IR sensor sends the signal to the microcontroller about the presence of the glass,

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Voice Controlled Robotic Vehicle

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ABSTRACT

This project work is designed to control a robotic vehicle through voice commands forwarded through smart phone using android application. The wireless communication link established between the android app and the vehicle is facilitated with Bluetooth technology. The main motive to build this voice controlled robotic vehicle is to analyze the human voice and act according to the predefined programmed commands. The most basic commands included here are forward, backward, right turn, left turn and stop. The vehicle will be controlled wirelessly with the use of android smart phone technology and it is very simple also economy point of view, it is very feasible or affordable.

The main processing unit will be constructed using Arduino Uno development board and with the help of a Bluetooth device interfaced with this processor, received commands will be digitalized. The moving mechanism will be constructed using 2 DC motors and these 2 motors are driven independently through motor driving circuit designed with H Bridge IC. The commands delivered from the android application through phone Microphone are converted in to digital signals by the Bluetooth RF transmitter & the range is defined as 50feets approximately.

1. INTRODUCTION

1.1 Introduction

The project work described in the abstract is intended to make a robot vehicle which can be controlled by the voice command of a person. Normally these types of systems are called as Speech Controlled Automation System (SCAS). In this field sophisticated robots are in use for multiple applications, but since it is a prototype module, here a simple robotic vehicle will be constructed to prove the basic concept of voice controlled machine technology. The idea of making this small device is to implement control action in a machine driven by voice commands. The robot is remotely controlled by a mobile phone and there are many topics based on the voice controlled devices establish a communication link between a mechanism and smart phone.

Smart phone is a very good interface for remotely operating the robot. It contains many features that can be helpful. In this design, an android application is used for the required task. The connection between the application and the robot facilitates the control task using Bluetooth technology. The commands issued will be relayed over through the channel and will be received by the module. The objective of voice controlled robotic vehicle (VCRV) is to listen and act on the commands of the user. Here the system requires accent training by which the device will start understanding the voice commands and the commands have been added by codes.

The main motive to build a VCRV is to analyze the human voice and act according to the programmed commands. The most basic voice commands are backward, forward, right, left, and stop. The vehicle is to be controlled wirelessly with the use of android smart phone. The goal of this project work is to make a robotic vehicle with use of advanced smart phone

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Women Safety Patrolling Robot Using IoT

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ABSTRACT

Today in the present global scenario, a woman's word of security and safe life is tough reality to happen, because women's sexual abuse has become a mainstream news in our everyday routine life. We should create a society in which women can travel openly and even at odd hours not of fear. While there are many rules and laws present, they are insufficient to provide the women in society with the full degree of security, safe and stable life. When the technology advances every day, it is a solution to other problems. And why can't we use these to create a stable and prosperous women's community. This project composed of components such as IR sensor, sound sensor, memory card, buzzer, camera, module and Raspberry pi3B+.

1. INTRODUCTION

1.1 Introduction:

India's greatest threat is the safety of its women. Women do not feel safe in a variety of situations. This needs to be addressed as quickly as feasible. Technology evolves and develops daily, affecting how people live. As a result, the focus of this article is on modernizing the technological framework to strengthen women's safety mechanisms. This project focuses on protecting women, in which women feel secure. In almost every sector, i.e., sports, music, education, politics, etc., women have made an impact today. But the question remains the same-Are women healthy in India? Even, the answer is NO. This project, therefore, proposes an electronic protection device for women, installed in public vehicles such as cars, buses, and auto-rickshaws as women are now being molested, abducted, and abused by drivers.

1.2 Project Elaboration:

In this project, we designed a system using a raspberry pi controller and we are using the webcam for live stream monitoring and we are using IR sensor. For obstacle detection and a sound sensor for recognizing any sound from 50hz to 10khz. This electronic device is mounted in the IR sensor, sound sensor, buzzer, and memory card interfaced with the Raspberry pi-3 B+ board.

1.3 Block Representation:

The block diagram consists mainly of seven components. They are:

1. Raspberry pi-3 B+
2. IR Sensor
3. Buzzer
4. Sound Sensor
5. Camera
6. Motor Driver
7. WIFI

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Analysis and Development of a Universal Joint

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ABSTRACT

Universal joint is a type of joint which allows angular moments in any direction, and is commonly used in shafts that transmit rotary motion. It generally consists of two hinges located close together, oriented at 90° to each other, connected by a cross shaft. It is widely used in industrial applications and vehicle drivelines to connect misaligned shaft. Automobile industries are exploring composite material in order to obtained reduction of weight without significant decrease in vehicle quantity and reliability. This is due to the fact that the reduction of weight of vehicle directly proportional to the fuel consumption.

In this project, it is proposed to design and analyse the Universal joint for the selected load condition. The failure of Universal joint occurs when the induced stresses exceed the permissible limit of the material, so it is necessary that design and analyse of Universal joint to withstand the working condition without failure. The modelling and Static analysis of the Universal joint will be done using PRO-E Creo 4.0 software. The same analysis is replicated for Steel, Cast Iron and Carbon reinforced epoxy composite. Based on the FEM analysis the best material will be recommended for the Universal joint.

1. INTRODUCTION

A joint is a device used to connect two shafts together at their ends for the purpose of transmitting power. Couplings do not normally allow disconnection of shafts during operation, however there are torque limiting couplings which can slip or disconnect when some torque limit is exceeded. The primary purpose of couplings is to join two pieces of rotating equipment while permitting some degree of misalignment or end movement or both. By careful selection, installation and maintenance of couplings, substantial savings can be made in reduced maintenance costs and downtime.

Universal Joint

A Universal joint is more commonly known as U-Joint. Besides, it can also be known as Universal coupling, Cardan joint, Hooke's joint etc. It is a mechanical connection between the rotating shafts which are generally not in parallel but intersecting. It can allow positive transmission of rotating power at a much larger angle than is permissible with a flexible coupling. And it can transmit torque and motion.

Universal joints can be widely used in all types of power transmission systems. They have a variety of applications. They can be used in food processing equipment's, replacement for expensive gear boxes, and drives, etc. Besides, they are also commonly applied in connecting power take off drive shafts in off highway tractors that operate drawn machinery such as rotary grass mowers and feed grinders. Cardan joint or Hooke's joint is the oldest and most common type of U-joint. This is quite popular in automobile applications. It can transmit relatively high torque with minimal radial loads.

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Refrigerator and Oven that are Powered by Solar and Wind Energy

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ABSTRACT

Using a thermo electric plate, the project's primary goal is to build a solar and wind-powered refrigerator cum oven. Solar and wind power, which are abundant and cheap, may be used to fuel this endeavour. The cost of this undertaking won't break the freezer. The solar panels and wind turbines in this project are used to recharge a Lead Acid Battery (12V, 1.2 Amp hours), which is then used to power a pelteir thermoelectric device that can provide either a cooling or warming effect, depending on the user's preference. Since this is going in a refrigerator, we need simply the cold setting. The battery is linked to a peltier thermoelectric device, which produces a cooling effect. PIC Microcontroller is being used to show the voltage. The polarity of the peltier plate may be switched by relay and a selection switch. exhaust fan PIC microcontroller solar wind LCD battery Thermo electric plate relay

1. INTRODUCTION

Thermoelectric heating (or cooling) technology has received renewed interest recently due to its distinct features compared to conventional technologies, such as vapour-compression and electric heating (or cooling) systems.

Thermoelectric (TE) modules are solidstate heat pumps (or refrigerators in case of cooling) that utilize the Peltier effect between the junctions of two semiconductors. The TE modules require a DC power supply so that the current flows through the TE module in order to cause heat to be transferred from one side of the TE module to other, thus creating a hot and cold side.

The model could be helpful for analyzing the drive requirement of TECs and loading effect of TEGs. Another important application of proposed model is when the performance of the TEM needs to be analyzed under specific conditions such as heat leakage, non-ideal thermal insulation etc. Using the model can analyzed not only existing modules, but also specify an optimal module for a specific problem. The present model is compatible with PSPICE or other electric circuit simulators for DC, AC, and TRANSIENT simulation types and will thus be an excellent tool for solving problems of temperature control. In this project we are using renewable energies such as solar, wind and the generated energy is stored into the rechargeable battery though charging circuit. This battery power is uses for peltier plate. Peltier modules contain two external ceramic plates separated by semiconductor pellets. One of the plates absorbs heat (becomes cooler) and the other plate dissipates heat (becomes hotter) when a current is passed through the semiconductor pellets.

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Utilising CFD Analysis for the Purpose of Designing and Analysing the Airflow of a Hybrid Racing Car

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ABSTRACT

Hybrid electric vehicles also have several conventional automobile features. The drive system gets its juice from a gas or electric motor and an internal combustion engine. There is still the issue of waste emission due to the inclusion of internal combustion engines, and hybrid electric vehicles' structure and control process are both challengingFurthermore, we opened and closed a variety of outlets and opening and closing a variety of cooling air ducts to see how the design parameters would change. the first study found that airflow through the wheelhouses increases drag. In the second experiment, researchers used input ducts to regulate airflow from the grilles into the cooling system. A thermally-velocity-propelled unmanned land platform was investigated as a feasibility study. Component sizes and selections were made based on the desired drive parameters.In this project to design of this project was completed using NX 12.0 and Crash analysis will be performed in Ansys workbench software by Explicit Dynamic module by using different materials (Al 2024, Carbon steel) for car body and Velocity 120 km/h (-33340 mm/sec) with the CFD was done by compressed Air developing a new vehicle operating mode and reselecting its components.

KEYWORDS: hybrid drive, drive system, NX 12.0, ANSYS, CFD

1. INTRODUCTION

Hybrid cars are becoming more popular and more common. Basically, a hybrid car is one that uses two or more engines i.e. an electric motor and a conventional engine (either petrol or diesel). The electric engine powers the car at lower speeds and gas engine powers it at higher speeds. A hybrid car like Toyota Prius and Civic Hybrid not only conserves fuel but also produce less CO2 emissions. Though hybrid vehicles are now growing in popularity but still few people are actually using it mainly due to lack of knowledge of how hybrid vehicles work and whether they're as good as other gasoline powered vehicles.

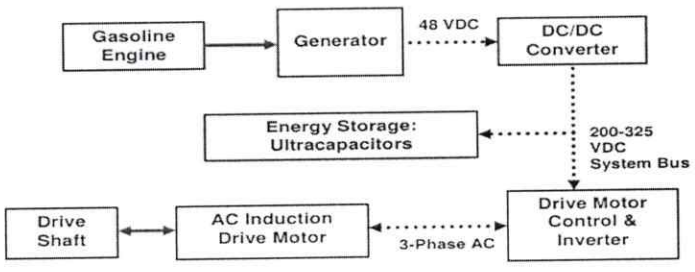

Figure 1: Block Diagram of our Series Hybrid System

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Analysis of G+30 Building Structure Using Etabs in Zone IV and Zone V

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ABSTRACT

Since the beginning of time, we have known that earthquakes can result in disasters. Buildings of today are becoming ever more slender and prone to sway, making them more dangerous during an earthquake. In the past, engineers and scientists came up with ways to make buildings more resistant to earthquakes. The ETABS software package's use of lateral load resisting techniques in the building configuration has significantly improved the structure's earthquake resistance, according to a number of practical studies. Shear walls and bracings were used in various situations for the work, and the highest level taken into consideration for the purpose of the study is 93.5 meters.

The modeling is finished with an eye toward how certain conditions and specific heights will be affected by seismic factors like story drift, shear force, building torsion, bending moment, and time. The acquired knowledge has been implemented for Zone IV in Soil Type II (medium soils) in accordance with IS 1893-2002.

KEYWORDS: Seismic load, ETABS software, storey shear values, medium soil, analysis, drift, shear

1. INTRODUCTION

The number of residential and commercial tall buildings has skyrocketed recently, and the current trend is toward taller buildings. Tall structures are a typical sight in both created and creating economies today. Multi-story buildings are becoming increasingly common as a result of population growth and a lack of open space. Because of this, the dynamic nature of wind and earthquake must be taken into account when analyzing these structures. As a consequence of this, lateral stresses such as seismic and wind forces are gaining prominence at an ever-increasing rate. As a result, virtually every designer faces the challenge of providing sufficient strength and stability against lateral pressures. The prediction of the wind load and the seismic loading is necessary for the design of high-rise buildings.

A tall building or high-rising building (HRB) can be defined from the perspective of a structural engineer as one that is affected by lateral forces like wind or earthquake, or both, to the point where they each play a very important role in the type of structure. Since the beginning of time, tall structures have been grouped together. The Egyptian Pyramids, one of the world's seven wonders and one of these ancient tall structures, were built around 2600 B.C. These structures were built for safety and enjoyment. When designing tall buildings, wind loads and earthquake loads must generally be taken into account. The guidelines for conducting dynamic assessments for wind loads and earthquake loads differ.

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Ambulance Aware Efficient Traffic Management System Using IoT

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ABSTRACT

As the population grows and the number of cars on the road decreases, it is reasonable to expect that the number of site visitors will increase, making manual control more difficult. Site visitors' police officers will benefit from this project, which is aimed at creating a cloud-based interface between motors so that traffic may be tracked automatically. The regulation of traffic lights on the road crossing has to be done on basis of traffic congestion and it is measured through the ultrasonic sensors. At road crossing four routes are making junction and on each route three sensors are connected to measure three levels of congestion i-e low, medium and high. Different technologies are there to detect traffic congestion and making congestion management more efficient. But these technologies have several drawbacks. RFID is easier, efficient and inexpensive congestion detection technology. Using RFID, we emerge new technique called as "Controller Based Intelligent Traffic Control System". This uses sensors along with embedded technology. It has facility to control timings of the red and green lights based on the traffic, pass the emergency vehicles such as ambulance, fire brigade etc.

KEYWORDS: Radio Frequency Identification, Internet of Things, Emergency Vehicles, Ambulance.

1. INTRODUCTION

Nowadays especially in urban areas traffic system is not efficient. The traditional traffic system has the drawbacks: - heavy traffic jam, even though no traffic in road vehicles have to wait, emergency car stuck in jam, lack of traffic information to users. To provide efficient traffic system we have to manipulate the traffic light dynamically based on real time traffic size, also we have to provide some mechanism to provide passage for priority vehicles so that they didn't stuck in the traffic. Also it needs some mechanism to help people to get information about traffic in specific areas if they wish. And also some mechanisms to take actions against rule breakers, such as fine deduction. Today the metropolis has a hard time dealing with the traffic. The traffic in the metropolis forces the ambulances to stop now and then. Also, the traffic signal creates a situation where the ambulance would not be able to pass as the traffic ahead of it is blocked by a traffic signal. This poses a great threat to the Ambulance as every second is vital to the healthy state of the patient. One of the effective ways to clear out the traffic ahead of the ambulance is by turning the signal green. The signal can be turned green by requesting the traffic signal controller or the cloud. However, this is a very time-consuming process. This won't also be effective as the traffic signal controller won't be able to track the live location These demerits can be handled effectively if the process is automated with the ability to live track the ambulance.

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Child Rescue System from Open Bore-Well

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ABSTRACT

In India for past few days people are facing a distressed cruel situation like child have fell in the bore well and struck in the hole which is uncovered and getting trapped. Rescue of trapped child from bore well is very risky and difficult process when compared to the other accidents. The currently available systems to save the child are less effective and costly too. It takes more than a day to save the child. Here, the child who is stuck inside the hole is to be saved by the clipper which pick and place the child with the help of remote controller. The clipper is left inside manually by the rope tied up at its hands. In this alternative scenario there will not be any requirements of digging hole parallel to the bore well. It also consists of camera which is affixed to the clipper which is used for monitoring the child. By this camera we get the visuals of the child and their condition.

1. INTRODUCTION

In current framework, growing water scarcity is the major problem which people come across in day-to-day life. Small children without spotting the hole dug for the bore-well slip in and get trapped. These accidents are mainly happened due to inattention or playful activities of the child. The occurrence of latest technique provides pragmatic opportunity for new robot power and awareness of new methods of control theory. The present robot control system can be used for different enlightened robotic applications. Robots have been very successful at manipulation in simulation and controlled environments. If the child fall into open bore-wells and rescue operations was almost end with failure. We are developing a robot machine that can take out the trapped body in a systematic way. It will be a light weight machine that will be setup easily into bore-well and hold the trapped body systematically. In this technology, there will be no requirement of digging any hole parallel to the borewell. With this machine, we can save the child within less time compare to convectional method. and this system named as "Child Rescue System in Open Bore-Well". Very few of the victims have been saved in such accidents. In some of these cases the dead body of the subject could not be collected easily. Even if rescued late, most victims were reportedly injured. To overcome such problems of these rescue operations, we have an alternative (feasible) proposal. We are developing a robot machine that can take out the trapped body in systematic way. This machine assembly will be supported by a cable wire and this will be controlled and supported by a gear assembly. In this alternative scenario, there will be no requirement of digging any whole parallel to the bore-well. The remotely controlled robot will go down the bore well and perform the action. A lot of other hassles will also be avoided by this alternative technique. The rescue of these trapped children in an uncovered bore-well is not only difficult but also risky. A small delay in the rescue operation can lost the life of the child. To lift the child out the narrow confines of the bore wells is also not very easy. Robot for bore well rescue system, offers a solution to these kinds of situations. It is fast, economical and safe.

- The main objective of this project is to design and construct a portable system which is cost effective, quick in action and accurate.

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Design and Implementation of High Speed Low PowerMux Based Full Adder Using 16nm Technology

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ABSTRACT

In this Project, novel circuits for XOR/XNOR and simultaneous XOR–XNOR functions are proposed. The proposed circuits are highly optimized in terms of the power consumption and delay, which are dueto low output capacitance and low short-circuit power dissipation. We also propose six new hybrid 1-bit full-adder (FA) circuits based on the novel full-swing XOR–XNOR or XOR/XNOR gates. Each of the proposed circuits has its own merits in terms of speed, power consumption, powerdelay product (PDP), driving ability, and so on. To investigate the performance of the proposed designs, extensive HSPICE and Cadence Virtuoso simulations are performed. The simulation results, based on Tanner the 16-nm CMOS process technology model, indicate that the proposed designs have superior speed and power against otherFA designs. A new transistor sizing method is presented to optimize the PDP of the circuits. In the proposed method, the numerical computation particle swarm optimization algorithm is used to achieve the desired value for optimum PDP with less iteration. The proposed circuits are investigated in terms of variations of the supply and threshold voltages, output capacitance, input noise immunity, and the size of transistors

KEYWORDS- swarm optimization, HSPICE

1. INTRODUCTION

In today's world, now day's electronic systems plays a crucial role in day to day life. Digital Gadgets e.g., microprocessors, communication devices, and signal processors, are part of electronic systems. As the demand for electronic systems increases, the usage of circuits [1] are restricted to consume low power and area consumption. Therefore, as there is growth in population and technology the demand for the portable devices such as mobile phones, tablets, and laptops have increased a lot , so the designers to meet the above requirement designs the circuit which consumes low energy consumption and area with the increase of speed. As the efficiency of many digital applications are to perform arithmetic operations, such as adder circuits, multipliers circuits and dividers schematics. As the technology is developed the chip density for the design of circuit is increased. So the plenty of transistors are doped into the singlechip.

2. EXISITNG METHOD

The Existing method XOR–XNOR circuit is saving almost 16.2%–85.8% in PDP, and it is 9%– 83.2% faster than the other circuits. The circuits of Fig. 1(d) and (e) have the very high delay dueto its output feedback (which have the slow response problem). As can be seen in Table I, the efficiency of Fig. 1(e) is much worse and its delay is four times more than that of other circuits. Table I indicates that the structures have shown a better performance, which

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DESIGN AND IMPLEMENTATION OF LOW POWER, AREA AND HIGH PERFORMANCE 4 BIT SEQUENCE DIGITAL COUNTER

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ABSTRACT

The goals of the low power VLSI circuit are to decrease the system's energy footprint and power consumption while increasing the battery life and performance. The scaling architecture, often known as a counter, modifies the values of an operator depending on its previous state. It's possible that the counting procedure might provide time and frequency data. Clock power dissipation during standby is the primary reason of the excessive power consumption of scaling circuits. About one-third of a counter's total power is used up by the clock signal. In order to save energy, this research minimizes the number of switches used. The low power consumption of the counter is the result of work done to reduce the stress on the flip-flops. Combining TSPCL with SVL (Self-Controllable Voltage Level) is a viable option for accomplishing this goal. TSPCL can execute the Flip-Flop operation rapidly while using minimal power. The SVL technique is simpler since it requires fewer transistors and hence consumes less energy due to leakage current. The new model saves 27% more energy than the previous one. The proposed method locates feasible functions for cutting-edge, low-power devices.

KEYWORDS- TSPCL, SVL, flip-flops.

1. INTRODCUTION

In logic circuits, a Flip-Flop is used to generate a 0 or a 1. Its primary use is archival storage. The flip-flop is unparalleled when it comes to sequential storage. In a scalable circuit, the number of repetitions of a process or event may be counted by inputting a clock signal. It counts the number of pulses received from the input line. Maintaining a reliable clock that uses minimal power is essential. This results in reduced power consumption by the circuit. Both synchronous and asynchronous counters are employed in Complementary Metal-Oxide Semiconductor Very Large Scale Integration. The output of one Flip Flop (FF) may serve as the clock input for the next FF in an asynchronous counter, but this is not possible in a simultaneous counter. The propagation time may be decreased by using a unique single-edge triggered D FF, although this kind of FF is not appropriate for higher operating frequencies. Multiple binary inputs may have their output compressed using a low-power scaling circuit that uses priority encoding. With a quasi-synchronous layout, energy is dissipated at a faster pace. Scaling circuit for a pseudo clock. These methods may produce effective layouts, but their scalable blueprints are prohibitively large. For low-power scaling, bi-stable storage components are often used in designs.

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Efficient and Enhanced Air Pollution Monitoring and Controlling Using IoT

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ABSTRACT

The level of pollution has increased with times by lot of factors like the increase in population, increased vehicle use, industrialization and urbanization which results in harmful effects on human wellbeing by directly affecting health of population exposed to it. In order to monitor In this project we are going to make an IOT Based Air Pollution Monitoring System in which we will monitor the Air Quality over a web server using internet and will trigger a alarm when the air quality goes down beyond a certain level, means when there are sufficient amount of harmful gases are present in the air like CO2, smoke and sound pollution sensor is attached to hardware to measure sound decibels. Further, this project is enhanced by measuring, monitoring and controlling the pollution parameters.

KEYWORDS: Internet of Things, Air pollution index, Humidity, Temperature, Air quality, Carbon monoxide.

1. INTRODUCTION

One of the most alarming issues in modern cities is the air quality level, where air pollution has caused 120 deaths out of 100,000 per year based on a worldwide study (Green Car Congress, 2019). The World Health Organization emphasized that 97% of cities in low- and middle- income countries with more than 100 000 inhabitants do not meet World Health Organization (WHO) air quality guidelines. Due to poor air quality, it will increase potential health risks such as risk of stroke, heart disease, lung cancer, asthma and others as well (citation). Hence, there is a need to install an air quality monitoring system in cities to ensure the air is not contaminated. This can be done by installing sensors to monitor dust particles, carbon dioxide, carbon monoxide, nitrogen dioxide and sulfur dioxide levels and this information can be shared with the public through smartphones, where the smartphone app allows people to monitor real-time data of the current air quality level in the area. Hence, through these implementations, better quality of life can be achieved. Respiratory problems are very common among many people due to air pollution and toxic substance of air. Carbon monoxide, Carbon dioxide, Sulfur dioxide, Nitrogen dioxide, Lead are certain air pollutants commonly known as Criteria pollutants. Microbes, moulds, Animal skins, pets, insects are common among the biological pollutants. Air pollution is a major drawback of the current environment and it is a hindrance for public health. Air pollution causes many adverse health effects in human beings, other organisms, for environment, variations in climatic conditions and changes in life cycle of everything. Harmful gases in the air is the reason for all the effects mentioned above by which the entire world suffers a lot. IOT and artificial intelligence based systems will be much helpful for the monitoring of environment. Algorithms like ANN, CNN, KNN, SVM, Random Forest are pre dominantly used for the environment monitoring. The monitored data or measured data is connected with Think

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FPGA-Based True Random Number Generation Using Programmable Delays in Oscillator-Rings

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ABSTRACT

True random number generators (TRNGs) are widely used in cryptographic applications such as key generation, random padding bits, and generation of challenges and nonces in authentication protocol. This paper proposes a new and efficient method to generate true random numbers in XILINX by utilizing the random jitter of free running oscillators as a source of randomness. The main advantage of the proposed true random number generator utilizing programmable delay lines is to reduce correlation between several equal length oscillator rings, and thus improve the randomness qualities. In addition, a Von Neumann corrector as post-processor is employed to remove any bias in the output bit sequence. clock gating architecture to limit the switching activity of the address decoder which improves the power efficiency of the proposed number generator. element structure is adapted to evaluate the clock cycle to the present ring counter block and to release the clock pulse to the next ring counter block. LUT memory accessing does not need write operations so data lines and read/write lines to the SRAM memory architecture is omitted.

1. INTRODUCTION

Computer systems and telecommunications play an important role in modern world technology. The communication and data transfer through computers touches almost every aspect of life, i.e. transferring data, tracking personal data, trading over the internet, online banking and sending emails. As more vital information is transferred through wire or wireless means, the need to safeguard all this data from hackers is growing. All these security concerns emphasize the importance of developing methods and technology for the transformation of data to hide its information content, prevent its modification, and prevent unauthorized use. Random number generation is a fundamental process for protecting the privacy of electronic communications. It is a key component of the encryption process that protects information from attackers by making it unreadable without the proper decryption process. Since the strength of an encryption mechanism is directly related to the randomness of the binary numbers used in it, there has been an enormous need to design and develop an efficient random number generator that can produce true random numbers to implement a safe and secure cryptographic system. In addition to cyber security, random number generators (RNGs) are a vital ingredient in many other areas such as computer simulations, statistical sampling, and commercial applications like lottery games and slot machines. Random numbers are needed in some areas in computer science, such as authentication, secret key generation, game theory, and simulations. In these applications, particularly numbers should have good statistical properties and be unpredictable and non-reproducible. The number generation in the literature is performed in two different ways as deterministic and nondeterministic [1, 2]. PRNGs (Pseudo Random Number Generators), which are

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IoT Based Health and Position Tracking System for Soldier Security System

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ABSTRACT

Nowadays all nations keep its security at high priority. Wars are being fought for land, water and acquiring the position of most powerful nation. A country's arm forces consist of three professional uniformed services: the army, the navy, and the air force. Soldiers being the backbone of any armed force usually lose their lives due to lack of medical help when in emergency, also soldiers who are involved in missions or in special operations get straggled on war fields and lose contact with the authorities. The system consists of two units viz, Soldier's unit and Base station unit. Soldier's unit can be integrated to the soldier's jacket as shown in below figure. Base station unit is major mobile. He/she can observe all parameters in their mobile. Further, this project is enhanced using IOT technology using NODE MCU. And indication at local set up is established by using LED bulb.

KEYWORDS: Internet of things, Soldier, Base station, Cryptography, Steganography, NODE MCU.

1. INTRODUCTION

The soldier must be integrated with advanced healthcare monitoring, real time GPS (Global Positioning System) and data communications to send and receive information to/from the control unit. For that Soldier might need wireless networks not only to communicate with control unit but also with side by side military personnel. Apart from the nation's security, the soldier must need safety by protecting himself with advanced weapons and also it is necessary for the army control unit to monitor the health status of the soldier. To serve this purpose, in this paper bio medical sensors and monitoring devices are integrated with the soldiers. The integrated components must be light weight package and must provide desired result without requiring much power. One of the fundamental challenges in military operations lies that the soldiers are not able to communicate with control unit. In addition, the proper navigation between soldiers plays an important role for careful planning and co-ordination. So, the proposed work focuses on tracking the location of soldier which is useful for control room station to know the exact location of soldier and accordingly they will guide them. Control unit gets location of soldier using GPS. It is necessary for the base station to guide the soldier on correct path if he lost in the battlefield. In current world scenario, the security of a nation is the uttermost important factor and the security of nation depends on the army force. Without the soldier it would be nearly impossible to protect a nation. There is a necessity to develop a wearable technology which isn't bulky and dessipates very little power in the defense sector so that the location and vital health parameters of the soldiers can be tracked in real time when he is on the battlefield. Using this soldier navigation system the base station can guide the soldier to reach the desired destination The nation's security is monitored and kept by army, navy and air-force. The important and vital role is of soldiers

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Low Power Delay Buffer Using Gated Driver Tree

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ABSTRACT

This paper presents circuit design of a low-power delay buffer. The proposed delay buffer uses several new techniques to reduce its power consumption. Since delay buffer r accessed sequentially, it adopts a ring-counter addressing scheme. In the ring counter, double-edge-triggered (DET) flip-flops are utilized to reduce the operating frequency by half and the C-element gated-clock strategy is proposed. A novel gated-clock-driver tree is then applied to further reduce the activity along the clock distribution network. Moreover, the gated-driver-tree idea is also employed in the input and output ports of the memory block to decrease their loading, thus saving even more power.

1. INTRODUCTION

PORTABLE multimedia and communication devices have experienced explosive growth recently. Longer battery life is one of the crucial factors in the widespread success of these products. As such, low-power circuit design for multimedia and wireless communication applications has become very important. In many such products, delay buffers (line buffers, delay lines) make up a significant portion of their circuits [1]–[3]. Suchserial access memory is needed in temporary storage of signals that are being processed, e.g., delay of one line of video signals, delay of signals within a fast Fourier transform (FFT) architectures [4], and delay of signals in a delay correlator [2]. Currently, most circuits adopt static random access memory (SRAM) plus some control/addressing logic to implement delay buffers. For smaller-length delay buffers, shift register can be used instead. The former approach is convenient since SRAM compilers are readily available and they are optimized to generate memory modules with low power consumption and high operation speed with a compact cell size. The latter approach is also convenient since shift register can be easily synthesized, though it many consume much power due to unnecessary data movement. Previously, a simplified and thus lower-power sequential addressing scheme for SRAM application in delay buffers is proposed in [5]. A ring counter is used to point to the target words to be written-in and read-out. Since the ring counter is made up of an array of D-type flip-flops (DFFs) triggered by a globalclock signal and all except one DFFs have a value of "0," it is possible to disable the clock signal to most DFFs. Such a gated-clock ring counter is implemented in [6] to compose a low-power first-in–first-out (FIFO) memory. The skyrocketing increasing transistor count and circuit density of modern very large scale integrated (VLSI) circuits have made them extremely difficult and expensive to test comprehensively. The DFT method In a digital processing chip of mobile communications, the delay buffer takes up a large portion of the circuit layout. If the power consumption of the delay buffer could be reduced significantly, the overall power consumption of the digital processing chip could be reduced significantly as well. On the other hand, as these chips are working at even higher operation frequencies, a new, lowpower delay buffer should be operable under high frequencies. Within parentheses, following the example. Some

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Retinal Disease Screening Through Local Binary Patterns

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ABSTRACT

When sugar level (glucose) in the blood fails to regulate the insulin properly in human body, diabetic is occurred. The effect of diabetic on eye causes diabetic retinopathy. Diabetic Retinopathy is one of the complicated diabetes which can cause blindness. It is metabolic and the disordered patients perceive no symptoms until the disease is at late stage. So early detection and proper treatment has to be ensured. To serve this purpose, various automated systems have been designed). A key feature to recognize Diabetic Retinopathy is to detect Microaneurysm in the fundus of the eye. This work investigates discrimination capabilities in the texture of fundus images to differentiate between pathological and healthy images. For this purpose, the performance of Local Binary Patterns (LBP) as a texture descriptor for retinal images has been explored.The goal is to distinguish between diabetic retinopathy (DR) and normal fundus images analyzing the texture of the retina background and avoiding a previous lesion segmentation stage. We propose preprocessing technique such as Contrast Limited Adaptive Histogram Equalization (CLAHE) to enhance the contrast of the input image and we use candidate extractors such as Circular Hough Transform to improve the red lesion detection. Finally the output image was classified as Normal and Diabetic retinopathy (DR).

These results suggest that the method presented in this paper is a robust algorithm for describing retina texture and can be useful in a diagnosis aid system for retinal disease screening.

1. INTRODUCTION

Retinal microcirculation offers a unique non-invasive way to study the early manifestation of several diseases affecting the human circulatory system. Changes in retinal vascular geometrical patterns such as width, tortuosity, branching angle, junction exponents and fractal dimension have been investigated as candidate biomarkers in various ocular, systemic and neurodegenerative diseases . Data from long- term population-based studies have demonstrated a consistent link between the retinal microvascular changes with incident clinical stroke , hypertension , arteriosclerosis , dementia and other cerebral small vessel diseases [9]. For instance, the narrowing of arteries and widening of veins is a significant indicator of the progression of diabetic retinopathy.

Visual surveillance in machine understanding has been investigated worldwide during last few decades. Human motion detection & tracking from video imagery is one of the most active research fields. The social interests in movement detection and tracking of people have enormously increase in recent years with numerous applications like human computer interface, surveillance, security and many others. Moving object detection and tracking is a challenging computer vision task consisting of two closely associated video analysis processes. The first one, object detection, involves locating an image object in the frames of a video sequence, while object tracking performs the monitoring of the video object temporal

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VLSI Design for Convolutive Blind Source Separation

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ABSTRACT

An essential method in signal processing, blind source separation (BSS) finds use in audio, picture, and biological signal processing, among other fields. Convolutive BSS is a particularly hard issue since it tries to separate mixed sources in cases where the mixing process is characterised by convolution. In order to meet the demands of real-time and efficient processing in applications like echo cancellation, audio source separation, and speech enhancement, this study proposes a novel VLSI (Very Large Scale Integration) architecture specifically designed for convolutive blind source separation. Convolutive BSS is accomplished by the suggested VLSI architecture with great accuracy and minimal latency by using cutting-edge algorithms and hardware optimisations. It combines many processing components, each in charge of determining and isolating the distinct source signals from the mixture that is being seen. These processing components improve separation efficiency even in the face of time-varying mixing situations by repeatedly refining source estimations using adaptive filtering approaches and complex signal processing algorithms. Adaptive parameter tuning, memory-efficient data structures, and parallel processing units are important aspects of the VLSI architecture. It is also adaptable to various computing needs and can handle varied quantities of sources, which makes it appropriate for a variety of real-world applications. The experimental findings indicate that the suggested VLSI architecture is efficient and effective in convolutive BSS settings, and that it can separate mixed sources in real time while preserving excellent signal quality. The hardware architecture is a useful tool for signal processing systems that need to extract meaningful source information from complex mixes due to its durability and scalability.

KEYWORDS: memory, high efficiency, BSS, and VLSI.

1. INTRODUCTION

Blind source separation (BSS) is a pivotal signal processing technique with a multitude of applications in fields such as audio processing, telecommunications, biomedical engineering, and more. It involves the separation of mixed source signals when the mixing process is not known a priori. One particularly complex and challenging variant of BSS is convolutive blind source separation, where sources are mixed through convolution, simulating real-world scenarios like acoustic environments with multiple sound sources and reflections. Convolutive BSS has gained immense importance in applications such as speech enhancement, audio source separation, acoustic echo cancellation, and many others. It presents unique challenges due to the time-varying nature of the mixing process, which requires sophisticated algorithms and efficient hardware implementations to achieve real-time separation. This paper focuses on addressing the challenges posed by convolutive BSS through the development of a specialized Very Large Scale Integration (VLSI) architecture. VLSI design plays a critical role in enabling the efficient and rapid execution of complex

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Implementation of Solar Inverter for Home, Garden, Street Light Applications

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ABSTRACT

This paper is written to enhance the use of resources in developed as well as developing countries. In this digital world, use of technology is very advanced and we prefer things to be done automatically without any human efforts. This project also helps to reduce human efforts. Also it is very useful to conserve resources. In today's world, there is a continuous need for automatic appliances. With the increase in standard of living, there is a sense of urgency for developing circuits that would ease the complexity of life. Also if at all one wants to know the number of people present in room so as not to have congestion, this circuit proves to be helpful. "Automatic room light controller with visitor counter" is a reliable circuit that takes over the task of controlling the room lights as well us counting number of persons/ visitors in the room very accurately.

1. INTRODUCTION

We see many people using Solar inverters these days which proves that its necessity has been increased in the current years. A Solar inverter is similar to a normal electric inverter but uses the energy of the Sun i.e. Solar energy. A solar inverter helps in converting the direct current into alternate current with the help of solar power. Direct power is that power which runs in one direction inside the circuit and helps in supplying current when there is no electricity. Direct currents are used for small appliance like mobile e phones, MP3 players, IPod etc. where there is power stored in the form of battery. In case of alternative current it is the power that runs back and forth inside the circuit. The alternate power is generally used for house hold appliances. A solar inverter helps devices that run on DC power to run in AC power so that the user makes use of the AC power. If you are thinking why to use solar inverter instead of the normal electric one then it is because the solar one makes use of the solar energy which is available in abundant from the Sun and is clean and pollution free.

Solar inverters are also called as photovoltaic solar inverters. These devices can help you save lot of money. The small-scale grid one have just two components i.e. the panels and inverter while the off grid systems are complicated and consists of batteries which allows users to use appliances during the night when there is no Sunlight available. The solar panel and the batteries that are placed on rooftops attract Sun rays and then convert the Sunlight into electricity. The batteries too grab the extra electricity so that it can then be used to run appliances at night.

Solar energy is becoming increasingly lucrative with the increasing cost and continuous depletion of the non-renewable energy resources and the growing demand of other renewable energy sources such as solar wind, geothermal and ocean tidal wave . However, in spite of the multiple benefits of solar energy, solar panels which capture sunlight are stationary (solar

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Power Quality Improvement Using Dynamic Voltage Restorer

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ABSTRACT

The series connected DVR will inject three-phase compensating voltages through the three phase injection transformer or three single-phase injection transformers with the main supply. The filtered VSI output voltage is boosted the desired level with the injection transformer.The transformer also isolates the DVR circuit from the distribution system. The capacity of the voltage source inverter (VSI) and the values for the link filter connected between the injection transformer and the inverter play a crucial in the design of the DVR. In this research project, new Dynamic Voltage Restorer (DVR) topology has been proposed. The capacity of the voltage source inverter (VSI) and values of the link filter is small that will improve the compensation capabilities for voltage harmonic, swell and voltage sagmitigation under various fault conditions. The new RLC filter is able to eliminate the switching harmonics. The capacity of the dc supply voltage is reduced when the value of inductance is small. The new DVR topology has high efficiency and the ability to improve the quality of voltage. An outline architecture of the RLC filter parameters for the specific model has been presented. The new DVR with proposed controlled Dynamic Voltage Restorer topology is modelled and simulated using the MATLAB. The control scheme has good control dynamics with minimum transient current overshoot.

1. INTRODUCTION

The term "power quality" refers to the degree to which electrical power is delivered to consumers without interruption, fluctuations, or disturbances. Poor power quality can lead to equipment damage, system failures, and increased operating costs for industrial, commercial, and residential users.

One effective way to improve power quality is through the use of a Dynamic Voltage Restorer (DVR). A DVR is a power electronics device that is connected to the electrical network and is used to mitigate voltage sags and swells caused by faults or other disturbances in the system.

The DVR operates by monitoring the voltage at its connection point and injecting a voltage of equal magnitude but opposite phase to the system when a voltage sag or swell is detected. This restores the voltage to its nominal level and protects sensitive loads from damage.

DVRs are highly effective at improving power quality and are increasingly being used in a range of industrial and commercial applications. They can be used to protect sensitive equipment such as computer systems, medical devices, and production lines from voltage fluctuations, and can also be used to improve the reliability and efficiency of the overall electrical system.

Overall, the use of DVRs is an effective way to improve power quality, protect equipment, and reduce operating costs in a range of industrial and commercial settings.

Power Quality refers to the level of voltage, frequency, and waveform consistency that determines the suitability of electrical power for the safe and efficient operation of electrical

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Solar Fed Cascaded Multilevel Inverter with Output Voltage Regulation

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ABSTRACT

The presence of harmonics in solar Photo Voltaic (PV) energy conversion system results in deterioration of power quality. To address such issue, this paper aims to investigate the elimination of harmonics in a solar fed cascaded fifteen level inverter with aid of Proportional Integral (PI), Artificial Neural Network (ANN) and Fuzzy Logic (FL) based controllers. Unlike other techniques, the proposed FLC based approach helps in obtaining reduced harmonic distortions that intend to an enhancement in power quality. In addition to the power quality improvement, this paper also proposed to provide output voltage regulation in terms of maintaining voltage and frequency at the inverter output end in compatible with the grid connection requirements. The simulations are performed in the MATLAB / Simulink environment for solar fed cascaded 15 level inverter incorporating PI, ANN and FL based controllers. To exhibit the proposed technique, a 3 kWp photovoltaic plant coupled to multilevel inverter is designed and hardware is demonstrated. All the three techniques are experimentally investigated with the measurement of power quality metrics along with establishing output voltage regulation.

INDEX TERMS: Harmonics, Intelligent Control, Multilevel Inverter, Photo Voltaic's, Power Quality,Voltage Regulation.

1. INTRODUCTION

Providing electrical energy access to rural zones is a fundamental requirement as a means of improving sustainable living standards topping the agenda in many developing countries [1]-[4]. Energy efficiency, electricity supply and sustainability are the most important research topics in society. The energy that is sustainable, renewable, cost-effective, reliable and secure is the fundamental requirement for economic growth, human and industrial development of a country. Ecological concerns, exhausting petroleum reserves and expanding reliance on fossil fuels from unstable locales have expanded the significance for more efficient use of energy. Sources like thermal, nuclear that has been used for some time now for the generation of electricity has its own merits and demerits. The developing attention to decrease the carbon footprint (CO2) has added to the expanding interest for research on non-fossil based fuel as a source of energy. Thus, a more sustainable energy supply is required across all sectors viz. residential, transportation, industrialisation and agriculture. This impromptu pressure and challenge on the environment have encouraged the energy providers to develop further and transform the energy system in a much effective manner. During the most recent times, it has been witnessed the reduced complexity of different energy policies and investment options are increased across the globe in the energy sector [5]. Renewable energy can be termed as liveliness from unlimited natural resources. There are many sources of natural renewable energy resource like sunlight, water, air, biomass, and geothermal heat. Over a specified

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CONSTANT CURRENT FUZZY LOGIC CONTROLLER FOR GRID CONNECTED ELECTRIC VEHICLE CHARGING

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ABSTRACT

The increase in demand for clean sources of energy is getting more attentioninrecent time. Electric vehicle (EV) is an important area to fulfil this demand. However, oneof the majorobstacles in the growth of EV is the longer charging time. Therefore, thereisadefinite need forthe reduction of charging time in EVs. Constant current chargingof EVcan help to solve this problem. That's why, the role of DC-DC converter is very important. DC-DC converters are commonly utilized in electronic devices such as mobile phones, computers etc. This paper presents the possibility of grid connected constant current charging of EV with buck DC-DC converter through fuzzy logic control (FLC). FLCiseasy to implement without the requirement of intensive mathematical modelling. Thecomplete model of the considered system has been developed in MATLAB/Simulink. The achieved simulation results show the viability and capability of the proposed scheme.

1. INTRODUCTION

Electric vehicles (EVs) are becoming increasingly popular due to their lower carbon emissions and lower operating costs compared to traditional gasoline-powered vehicles. As the number of EVs on the road increases, the demand for EV charging infrastructure also increases. Grid-connected EV charging systems are an essential component of the EV ecosystem and require sophisticated control systems to ensure efficient and safe operation.

A constant current fuzzy logic controller (CCFLC) is a type of control system that can be used for grid-connected EV charging. The CCFLC uses fuzzy logic to control the charging current of an EV battery by adjusting the output voltage of the charger. Fuzzy logic is a type of logic that deals with uncertain or imprecise information and can be used to create control systems that are robust to changes in the input and output variables.

The CCFLC is designed to maintain a constant charging current while taking into account the charging state of the battery and the power available from the grid. The controller can adjust the charging current based on the battery's state of charge and can reduce the charging current if the grid power is limited. This ensures that the EV battery is charged efficiently without causing any strain on the grid.

In summary, the CCFLC is a type of control system that can be used for grid-connected EV charging. It uses fuzzy logic to maintain a constant charging current while taking into account the charging state of the battery and the power available from the grid. The CCFLC ensures efficient and safe operation of the EV charging system and is a critical component of the EV ecosystem.

Electric vehicles (EVs) are becoming increasingly popular as a clean and sustainable mode of transportation. As the number of EVs on the road grows, the demand for charging infrastructure also increases. Grid-connected EV charging is one solution to meet this demand, where EVs are charged by drawing power from the grid.

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DESIGN AND SIMULATION OF PV WIND GENERATOR WITH LOAD SIDE CONVERTER FOR HIGH ACCURACY AND EFFICIENCY OF GRID NETWORK

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ABSTRACT

Primary aim of the paper is to generate the quality of power from the renewable energy resource, the wind system is considered here. In general the system is operated in two mode conditions i. standalone mode ii. Grid connected mode. This paper explains the control of a standalone system using two different control schemes namely a. generator side control scheme b. load side control scheme. Which are helps to regulate output voltage levels and power delivered to load with any disturbances even in the variations caused in the input side, The MATLAB platform is used for the testing control strategy. The purpose of control is to adjust the inverter voltage's amplitude and frequency at a variable speed of the wind. This article presents a Generalized Predictive Control application to a wind power converting system with emphasis on the Maximum Power Point Tracking (MPPT). The controller developed consists RST regulator obtained GPC.

KEYWORDS: MATLAB, RSC, GSC, PLL, Grid, BES.

1. INTRODUCTION

Distributed generation (DG) system [5] has emerged due to the de-regulation in the electric markets. These units comprise both renewable and non-renewable sources. As there is an increase in the awareness for environmental preservation and the drive to reduce greenhouse gas emissions, there has been a significant shift towards renewable energy sources [4], leading most people to associate the acronym DG with such. Among those, wind energy, being clean, reliable and commercially competitive, has been one of the most popular choices. There are many wind energy conversions systems (WECS) in use and many new systems are being planned. According to the Global Wind Energy Council (GWEC), the total capacity of wind power operating in the world reached 194.4 GW in 2010, an increase of 22.5 % from 159.2 GW in 2009. In Canada alone, the installed capacity is 4009 MW in 2010, an increase of 17% from 2009. In coming years With many government incentives across most of its provinces, it is expected that wind power installation will experience steady growth. As Wind power cannot be predicted like the other resources it has a different conversion system. The main reasons for the contrast nature of the conversion system are (1)the construction of WECS, which most commonly use power electronics-based converters, resulting in the application of different topologies, (2) the unpredictable nature of wind power, which is alternating and undecided, and (3) the change from a passive distribution network into an active one with multiple energy sources and bidirectional power flow. Due to these factors with wind power, it interacts differently with the power system network. The challenging part of this is the dependency of the injected power on the wind speed. Therefore

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OPTIMIZING DG FOR DISRUPTIONS IN UNBALANCED SYSTEMS THROUGH GRID-CONNECTED CONVERSION

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ABSTRACT

Riding over network disruptions while maintaining voltage level using grid-connected conversions (GCCs) having lately emerged as major demands represented in grid rules. This work offers a novel technique for generating reference signal capable of sustaining voltage levels by inserting an appropriate set of +ve/-ve watt/wattles currents through four controlling variables. Empirical formulae are presented to obtain the optimal configurations at all under the mesh voltage condition. The following objectives can be met to provide maximum performance: First, phase voltage limits were met; next, real and reactive power flow was optimized; third, fault currents were restricted; and finally, oscillations on real and reactive power were reduced. These optimal behaviours give significant benefits to developing GCCs, including as greater efficiency, reduced dc-link disturbances, better ac network stability, and less device failure. Simulation and empirical studies confirm the analytical conclusions and recommended expressions.

KEYWORDS: Grid outages, LVRT, converters, and reference-current generation.

1. INTRODUCTION

The growing integration of non conventional sources of energy and distributed energy (DG) equipment into power system networks has created serious stability concerns. As a result, undertake to ensure have developed strict criteria enabling GCCs to function under abnormal grid conditions [1–3]. As a result, GCCs must also withstand such disturbances and maintain grid supply, as well as provide v/f support. The compatibility of the grid-connected converters with these new criteria has just been extensively researched in the research.

The study utilises, but modifies, one of most sophisticated RCG (reference current generator) method (described in [4]), which may include positive/negative and watt/wattles current flow with varying degrees of flexibility.

This RCG provides significant voltage support services by balancing the +ve and -ve sequences of the respective watt and wattles currents via two regulating parameters, kp and kq. Additionally, the real and reactive power control parameters could be regarded as the other two standard values.

The first section of this study provides extensive mathematical model to evaluate the effectiveness of the RCG used. Following phrases can assist engineers in properly designing a GCC's control systems. Optimum cycles on sudden real/reactive energies (pmax&qmax) and peak step currents are the three most important features of RCG techniques (Imax). The equations of pmax, qmax, and Imax for the applied RCG are developed in this article. This work's analytical analyses and principles may be used to a variety of approaches.

The main contribution of this work is a novel control system based on mathematical formulations that can determine the optimal ranges for the controlling (kp, kq, P, and Q) standard parameters in any fault condition state in order to achieve the desired goals:

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SMART GRID POWER QUALITY IMPROVEMENT USING MODIFIED UPQC

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ABSTRACT

The Smart Grid system typically deals with different issues involving security and Power Quality improvement. With frequent usage of power electronic devices and nonlinear load, harmonics are inserted into the system. The well-known Flexible AC Transmission System devices like Unified Power Quality Conditioners are usually employed to resolve the issues related to voltage sag, swell, flicker, PQ, and neutral current reduction of distribution systems. An UPQC itself inserts harmonics into the system that affects the system stability for sensitive loads. This paper describes proposed controller for harmonics elimination techniques for modified UPQC connected with SG. Lower order harmonics are eliminated by proper selection of switching angles and at the same time the higher order harmonics are suppressed by injecting same order harmonics with equal magnitude but opposite in phase from the other converter. The excitation of Modified UPQC converters are obtained from PV panel. The firing angles of series-shunt converter are obtained in real-time from the already stored angles in the microcontroller memory.

1. INTRODUCTION

The power quality of the electrical grid is crucial to the reliable operation of power systems. Power quality issues such as voltage sags, swells, harmonics, and flicker can cause equipment malfunction, system instability, and even power outages. To address these issues, various power quality improvement techniques have been proposed, one of which is the Unified Power Quality Conditioner (UPQC).

The UPQC is a device that combines both shunt and series active power filters to mitigate voltage and current disturbances simultaneously. However, the conventional UPQC suffers from a few limitations, such as poor harmonic compensation and low power factor correction. To overcome these limitations, a modified UPQC (MUPQC) has been proposed.

The MUPQC uses a novel control strategy that improves harmonic compensation and power factor correction. The MUPQC consists of two voltage source inverters (VSIs), one connected in shunt and the other in series with the load. The shunt VSI injects current to compensate for load current harmonics and corrects the power factor, while the series VSI injects voltage to compensate for voltage harmonics and regulate the load voltage.

The MUPQC control strategy is based on a combination of a proportional-integral (PI) controller and a fuzzy logic controller (FLC). The PI controller is used to regulate the DC link voltage, while the FLC is used to control the active and reactive power flow between the shunt and series inverters. The FLC improves the dynamic response of the MUPQC and allows it to quickly compensate for power quality disturbances.

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Delivering the Undeliverable: Teaching English in a University Today

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ABSTRACT

In UK universities, English has seen a steep fall in admissions, in the context of a general decline in humanities enrolments and changes to the school curriculum which have turned students away from the subject. This article explores what teaching English in a university means in these difficult times. It asks: what actually happens in an English class? What do students learn? And why is it so hard to make the case for English, to find a form of words in today's educational vocabulary that will convince sceptics of its value? The subject's declining status is part of a more general sense that technological change and the free market have answered all the key questions about what skills we need to learn and how we should live our lives. We frame the delivery of teaching in terms suggested by technology and the market – as a frictionless process with a predictable and measurable outcome. This does not sit well with the untidily human, stochastic, accretive nature of humanities teaching. And yet the skills of close reading cultivated in literary study can teach students to plot a course through contemporary life. They can help them to navigate a digitized, online, data-driven world whose meanings and values are filtered through unexamined words and unacknowledged stories.

1. INTRODUCTION

For the past twenty-five years, I have taught English Literature in an English university. For much of that time, I have done my job with an absent-minded, self-contented, ill-defined sense of its intrinsic worth. Reading, talking, and writing about literature seemed to me an obvious source of pleasure, instruction and enlightenment. The rituals of the university year, the eternal pull of timetables and deadlines, the always reassuring sight of students diligently taking notes while I spoke, the confirming solidity of the buildings and the hordes of people loitering in and flowing purposefully along them – all these offered existential certainty, the feeling that what I did was useful, perhaps indispensable.

Recently, though, this sense of certainty has evaporated. English has seen a steep decline in undergraduate admissions – part of a broader decline in the proportion of students studying humanities subjects since 2012, as austerity and higher fees have driven more career-specific choices. The COVID-19 lockdowns had a similar impact in academia as they did in other workplaces, pulling apart the scaffolding of daily routines and forcing us to reinvent our jobs in ad hoc and unsettling ways. This overlapped with, and added to, a mood of suspicion towards universities in political and public life. Universities, in this dispiriting caricature, were havens of hidebound practices, woke politics and deplatforming. And now they were fleecing students, expecting them to pay thousands of pounds in fees and rent to sit in study-bedrooms and be taught online for a few hours a week. This caricature, while rooted in the practical issues of lockdown, had a wider political subtext. The government had signalled that the long expansion of higher education since the 1960s was over. The accompanying mood

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Multiscale Stochastic Reaction-Diffusion Algorithms Combining Markov Chain Models with Stochastic Partial Differential Equations

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ABSTRACT

We analyze two multiscale methods for reaction-diffusion process stochastic simulations. They can be used in systems that contain areas where the concentrations of molecules differ noticeably. Both approaches split an interest region into two subsets, one for stochastic partial differential equations (SPDEs) and the other for continuous-time Markov chain models. The first approach considers a pseudo compartment (also known as an overlap or handshaking zone) in the SPDE portion of the computational domain immediately next to the interface in order to associate Markov chain (compartment-based) models with reaction-diffusion SPDEs. There is no usage of an overlap zone in the second algorithm. Additional developments of both schemes are showcased, encompassing the scenario of an adaptively selected boundary separating distinct modeling methodologies.

KEYWORDS: Gillespie algorithm, multiscale modeling, chemical reaction networks, Markov chain, stochastic reaction-diffusion systems, and stochastic partial differential equations.

1. INTRODUCTION

Stochastic models of well-mixed chemical systems are traditionally formulated in terms of continuous time Markov chains, which can be simulated using the Gillespie stochastic simulation algorithm (SSA) [42] or its equivalent formulations [12, 41, 60]. These algorithms provide statistically exact sample paths of stochastic chemical models described by the corresponding chemical master equation (CME). However, they can be computationally expensive for larger chemical systems, because they explicitly simulate each occurrence of each chemical reaction. A number of approaches have been developed in the literature to decrease the computational intensity of SSAs. Taking into account separation of time scales, chemical reaction networks can be simplified by model reduction before they are simulated [51–54, 58]. The idea of model reduction can also be used to develop computational methods which efficiently estimate quantities of interest from stochastic simulations [10, 11, 13, 26]. Another approach is to describe the molecular populations in terms of their concentrations that change continuously (rather than treating them as discrete random variables). This can be achieved by the chemical Langevin equation, which is a stochastic differential equation (SDE) acting as a bridge between discrete SSAs and deterministic reaction rate equations [43, 61, 62]. Efficient algorithms which make use of the SDE approximations have been developed for the simulation of chemical systems especially when they include processes occurring on different time scales [15, 44, 46, 71]. More recently, the SDE approximations have been extensively used to develop hybrid algorithms which use boths SSAs and SDEs for

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Research Publications of Physics at the Indian Institute of Science, Bengaluru: A Scientometrics Study

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ABSTRACT

The study attempts to analyse research publications of the Indian Institute of Science, Bengaluru in physics during the period 2010 - 2019. The bibliographic data for this study was extracted from the Web of Science (WoS) Core Collection database. The study analyses the year-wise research publications, types of document, preferred journals for publication, prolific author, h-index, most collaborating institutions and countries, etc. This paper analyses 2593 research papers published by scientists of the Department of Physics, Indian Institute of Science, Bengaluru during the period under the study. The findings indicate that the growth of literature pattern is linear, and journals articles (2421) are the most preferred form of publications by the researchers to communicate their research. Ajay Kumar Sood is found to be the most prolific author and Physical Review B is the most preferred journal. In the most cited publications, only one paper was single-authored and other 19 research papers were multiple-authored. Indian Institute of Technology and Jawaharlal Nehru Centre for Advanced Scientific Research were the leading collaborating institutions (195). The USA, Germany, France, England, and Sweden were the top five most collaborative countries.

KEYWORDS: Indian Institute of Science, Research output, Physics, IISc, Scientometric, Bibliometric.

1. INTRODUCTION

Reputation and prestige of an institution both at national or international level depend greatly on the research productivity and its impact. The higher academic ranking and the funding agencies give weight to research publications (Kumar & Senthikumar, 2019). It is, therefore, important to study, analysis and understand the research output of an institute 2 and a discipline. The present study examines research publications of Physics discipline at the Indian Institute of Science, Bengaluru by using scientometric techniques. Bibliometrics, scientometrics, webometrics, and altmetrics are all aimed at analysing, quantifying, and measuring communication purposes. ALA Glossary of Library and Information defines bibliometrics as "the use of mathematical and statistical methods to study and identify patterns in the use of materials and services within a library". Hood and Wilson (2001) state that scientometrics includes "all quantitative aspects of the science of science, communication in science, and science policy". In general, bibliometric studies can be divided into two broad categories (Soos et al., 2013): evaluative bibliometric studies and structural bibliometric studies.

Indian Institute of Science (IISc) was established in 1909. It is not only the leading institution in India but also in the world in the field of modern science and engineering. The Department of Physics at IISc was established in the year 1933 by the Nobel Laureate C.V. Raman. He was the first Indian to be appointed as IISc's Director in 1933.

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Structural and Magnetic Study of Chromium Ferrite Nanoparticles

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ABSTRACT

Pure chromium nanoparticles with the general formula CrFe2O4 have been created using the conventional wet chemical co-precipitation process. For four hours, the prepared sample was annealed at 600 0C. For the prepared sample, room temperature X-ray diffraction patterns were obtained to verify the creation of a single-phase cubic spinel structure. On prepared samples, studies using a scanning electron microscope were performed to examine the surface morphology. The size of the particles as determined by XRD and SEM data is in the nanometer range. The range reported for the lattice constant was met. The pulse field hysteresis loop approach was used to study the magnetic characteristics. It was discovered that the coercivity and saturation magnetization values were higher than their bulk counterparts.

KEYWORDS: chemical co-precipitation, nanoparticles, lattice constant, and X-ray diffraction

1. INTRODUCTION

In the recent years ferrites having high electrical resistivity, low eddy current loss, structural stability, large permeability at high frequency, high coercivity, high cubic magneto crystalline anisotropy, good mechanical hardness, and chemical stability, nanosized spinel-type ferrites have emerged as an important class of nanomaterials.[1,2]As a result, research devoted to the development and characterization of such nanomaterials, the development of cost-effective, environmentally friendly synthesis processes, and the discovery of novel uses for existing materials has gained a great deal of interest. MFe2O4 type spinel ferrite attracts several researchers because of their twin property of magnetic conductor and electric insulator. These materials are widely used in the electronic and electrical industries for the fabrication of devices and components such as high-density magnetic core of read/ write for the high-speed tapes etc.[2,3]

In recent years there has been considerable interest in the study of the properties of nano-sized ferrite particles because of their importance in the fundamental understanding of the physical properties as well as to their proposed applications for many technological purposes.[4,5] The unique properties of nanoparticles are in general related to the adoption of materials, crystal structure to a small (nano size) and large surface to volume ratio.

Among the several spinel ferrites Chromium ferrite is an interesting ferrite because it crystallizes either in a tetragonal or cubic symmetry depending on the cation distribution among the interstitial siteof a spinel structure.[6,7]

The other interesting feature of Chromium ferrite is that it contains Jahn Teller ion which is responsible for interesting electrical and magnetic properties. In bulk form, Chromium ferrite is a magnetic compound useful in many technological applications.[8] They can also be prepared by techniques such as wet chemical co-precipitation,[9] sol-gel[10], hydrother...

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Travelling Waves in Hybrid Chemotaxis Models

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ABSTRACT

Hybrid models of chemotaxis combine agent-based models of cells with partial differential equation models of extracellular chemical signals. In this paper, travelling wave properties of hybrid models of bacterial chemotaxis are investigated. Bacteria are modelled using an agent-based (individualbased) approach with internal dynamics describing signal transduction. In addition to the chemotactic behaviour of the bacteria, the individual-based model also includes cell proliferation and death. Cells consume the extracellular nutrient field (chemoattractant) which is modelled using a partial differential equation. Mesoscopic and macroscopic equations representing the behaviour of the hybrid model are derived and the existence of travelling wave solutions for these models is established. It is shown that cell proliferation is necessary for the existence of non-transient (stationary) travelling waves in hybrid models. Additionally, a numerical comparison between the wave speeds of the continuum models and the hybrid models shows good agreement in the case of weak chemotaxis and qualitative agreement for the strong chemotaxis case. In the case of slow cell adaptation, we detect oscillating behaviour of the wave, which cannot be explained by mean-field approximations.

KEYWORDS: hybrid model · travelling wave · bacterial chemotaxis

1. INTRODUCTION

The wavelike spread of cell populations plays a fundamental role in many biological processes, including development [24], wound healing [38] and tumour invasion [16]. Bacterial populations show similar phenomena, with the pioneering studies of Adler [1] confirming the capacity of an E. coli population to form travelling bands via chemotaxis to extracellular signals. Mathematically, the extent to which chemotaxis can generate and sustain stationary travelling bands has motivated a number of studies, including the Keller-Segel model of Adler's experiments which is written in the form of coupled partial differential equations (PDEs) [20]. This early model necessitated a biologically unrealistic singularity in the chemotactic sensitivity to generate stationary travelling waves: a requirement that allows bacteria behind the wave to acquire infinite speeds and to avoid "dropping-out", an effect that leads to gradual dispersal of the band [40, 15].

This singularity requirement can be circumvented by incorporating other processes. The well known Fisher's equation [14] demonstrates travelling waves in systems coupling diffusion with logistic growth terms [14]. Parabolic chemotaxis models with non-singular sensitivities but incorporating either logistic [22, 23, 30] or non-logistic [21, 36] growth terms also admit travelling wave solutions. Other studies have shown that introduction of more complex nutrient terms can give rise to travelling waves, even when growth is absent [34, 35]. An experimental system which also included two chemicals – a chemoattractant and a nutrient source – was presented in [6, 7], with stationary or transient travelling waves obtained

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Asymmetric Periodic Boundary Conditions for Molecular Dynamics and Coarse-Grained Simulations of Nucleic Acids

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ABSTRACT

Periodic boundary conditions are commonly applied in molecular dynamics simulations in the microcanonical (NVE), canonical (NVT) and isothermal-isobaric (NpT) ensembles. In their simplest application, a biological system of interest is placed in the middle of a solvation box, which is chosen 'sufficiently large' to minimize any numerical artefacts associated with the periodic boundary conditions. This practical approach brings limitations to the size of biological systems that can be simulated. Here, we study simulations of effectively infinitely-long nucleic acids, which are solvated in the directions perpendicular to the polymer chain, while periodic boundary conditions are also applied along the polymer chain. We study the effects of these asymmetric periodic boundary conditions (APBC) on the simulated results, including the mechanical properties of biopolymers and the properties of the surrounding solvent. To get some further insights into the advantages of using the APBC, a coarse-grained worm-like chain model is first studied, illustrating how the persistence length can be extracted from local properties of the polymer chain, which are less affected by the APBC than some global averages. This is followed by all-atom molecular dynamics simulations of DNA in ionic solutions, where we use the APBC to investigate sequence-dependent properties of DNA molecules and properties of the surrounding solvent.

1. INTRODUCTION

The structure and function of DNA depends on its nucleotide sequence and on the properties of the surrounding solvent.1 Since DNA is negatively charged, concentrations of ions are perturbed from their bulk values in the region close to DNA. The resulting 'ion atmosphere' has been studied using ion counting experiments.2 From the theoretical point of view, allatom molecular dynamics (MD) simulations can be applied to provide detailed insights into DNA, ions and water interactions.3 For example, the effect of mobile counterions, Na+ and K+ on a DNA oligomer was studied by Várnai and Zakrzewska,4 who used periodic boundary conditions for MD simulations of the solvated DNA oligomer at constant temperature and pressure and studied the counterion distribution around the DNA structure.

However, the applicability of all-atom MD studies is limited to relatively small systems. To simulate larger systems, several coarse-grained approaches have been developed in the literature. In adaptive resolution studies,5,6 DNA and its immediate neighbourhood are simulated using the full atomistic resolution, while a coarse-grained description is used to describe the solvent molecules which are far away from DNA. Solvent can also be treated implicitly in far away regions.6 To model even larger systems, the DNA molecule itself can be described by coarse-grained models.7–10 Examples vary from models using several coarsegrained sites per nucleotide11 to Brownian dynamics simulations.12,13 Using a systematic 'bottom-up approach', the interaction potential between coarse-grained sites can

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Nuclear Laboratory Setup for Measuring the Soil Water Content in Engineering Physics Teaching Laboratories

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ABSTRACT

One important soil parameter that is measured in many engineering, geology, soil and environmental science investigations is the soil water content (θ). For example, θ influences the assessment of soil strength, hydraulic conductivity, groundwater recharge, and soil aeration condition. Measurement of θ is essential for tracking and managing a number of soil processes. A quick and non-destructive method for determining μ in soils with drastically different compositions is the gammaray attenuation (GRA) approach. However, lab physics classes rarely cover GRA. An experiment involving the measurement of θ using a teaching GRA apparatus is proposed. A Geiger-Müller detector, a radiation counter, and a radioactive source with a 37Cs decay were the components of the experimental setup. Four different granulometric compositions of soil samples were examined. The transmitted gamma-ray photon intensity and θ were found to have strong linear relationships (correlation coefficients ranging from −0.95 to −0.98). There were variations in the soil porosity between the traditional and GRA techniques, ranging from around 7.8% to about 18.2%. Furthermore, a robust linear correlation (correlation coefficients ranging from 0.90 to 0.98) was noted between the GRA and the conventional gravimetric technique for measuring θ. The effectiveness of the teaching GRA apparatus in measuring θ was confirmed. Additionally, the device enables undergraduate students from a variety of subject areas to be introduced to a few significant facets of the study of contemporary physics.

KEYWORDS: attenuation coefficient, soil granulometry, soil porosity, 137Cs gamma-ray photons, and soil aggregates.

1. INTRODUCTION

Water is an essential element for life. For plants, it is stored and retained by capillarity in the pores of the soil skeleton [1]. The soil water content (θ), which can be expressed in terms of mass or volume percentages, is a measure that often is related to the maintenance and establishment of irrigated crops. Rational water usage in agriculture is an issue of great relevance since it consumes 70% of all the freshwater used worldwide [2]. Unfortunately, half of this consumed water is wasted due to inappropriate usage in different agricultural practices developed all around the world. In addition, to be absorbed, the water present in the soil must be available to the plant [3].

Soil is considered saturated when its entire pore space is filled with water [4]. In opposition, the soil is dry when all its pore space is filled with air. Between these two extremes, the soil is said to be moist. According to the existing literature, there are different methodologies for determining θ [1]. The standard (traditional) method is based on the determination of the mass or volume of water present in the sample at the time it is analyzed [5]. Other methods for measuring θ are based on the interaction of photons or particles with the sample. Among

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Supramolecular Architecture and Photophysical and Biological Properties of Ruthenium (II) Polypyridyl Complexes

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ABSTRACT

Complexes of the type [Ru(N–N)2(tdzp)]Cl2, where N–N is 2,20 -bipyridine (bpy) (1), 1,10-phenathroline (phen) (2), dipyrido[3,2-d:20 ,3-f] quinoxaline (dpq) (3), which incorporate the [1,2,5]-thiadiazolo-[3,4-f]- [1,10]-phenanthroline (tdzp) ligand, have been synthesized and characterized by IR, 1 H-NMR, 13C-NMR, ESI-MS, elemental analysis, UV-Visible and luminescence spectroscopy. The molecular structure of complex 2 is confirmed by single crystal X-ray structure determination. A two-dimensional cyclic water– chloride anionic {[(H2O)10(Cl)2] 2}n network has been structurally identified in a hydrophobic matrix of 2. Interaction of these complexes with Calf Thymus DNA (CT-DNA) was explored by electronic absorption and emission spectroscopy and circular dichroism spectroscopy. The nucleolytic cleavage activity of complexes 1–3 has been carried out on double stranded circular plasmid pBR322 DNA by gel electrophoresis experiments. The cytotoxicity of the complexes against a cancer cell line has been studied by MTT assay and cellular localization of complexes within the cells has been monitored by fluorescence microscopy. Notably, 1–3 exhibit potent antiproliferative activities against a panel of human cancer cell line.

1. INTRODUCTION

Deoxyribonucleic acid (DNA) is the primary carrier of all genetic information and it plays a major role in replication and storage of genes. Thus the molecules that interact with DNA have a variety of applications including pharmaceuticals, tools for molecular biology and probes for electron transfer.1,2 In this context, over the last two decades the transition metal polypyridyl complexes have received a considerable amount of attention.3–12 In particular coordinatively saturated ruthenium(II) polypyridyl complexes have received much attention because of their tuneable photophysical and photochemical properties, leading to a wide range of successful or potential applications in the field of photochemistry, photo-physics, and biochemistry.4,5,13,14 A widely studied [Ru(bpy)3] 2+ (bpy = 2,20 -bipyridine) complex binds electrostatically to DNA having binding affinity in the order of 103 M1 , 15 but when one of the bpy ligands is replaced with a dppz (dppz = dipyrido[3,2-a:20 ,30 -c]phenazine) ligand, it results in the [Ru(bpy)2(dppz)]2+ complex that binds intercalatively to DNA with a binding constant of the order 106 M1 and this complex also behaves as a molecular light switch for DNA.2,16,17 This shows that the DNA interaction properties of complexes can be tuned by modification of ligands. Ruthenium polypyridyl complexes interact with DNA by non-covalent interaction such as electrostatic, minor groove, major groove, partial intercalative and intercalative binding modes.18 However, there is still uncertainty on the exact location of binding modes. Further studies are necessary using different structural ligands to evaluate and understand the factors that determine the DNA binding modes.

It has been largely accepted that ruthenium(II) polypyridyl complexes can be used as probes for DNA structure determination,5,19,20,21 DNA photo-cleavage agents and DNA mediated

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Friction Stir Welding Equipment Optimisation

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ABSTRACT

Friction-stir welding, or FSW for short, is a technique for combining controlled surfaces that uses an external tool in place of melting steel. This method falls under the category of solid-state joining. The gadget and some of the cloth generate heat, which leads to a rather straightforward positioning near the FSW instrument.

Subsequently, the two metal quantities are mechanically mixed in the joint area. Next, using mechanical force (given via the device's mechanism), which is comparable to connecting dough or clay, the metal—which has softened due to the elevated temperature—may be joined. The circular tool we constructed for this project revolved at 1000 revolutions per minute after introducing thermal (temperatures and convection on plates and device additionally) and static (device rotational tempo of 1000 rpm) boundary conditions. and the calculated findings, which include a wide range of topics including warmth flow and deformation pressure.

Three other gears in the shapes of a pentagon, a tapering pentagon, and a truncated pentagon were also built in this research. To ascertain which device may be used in lieu of a spherical device, we performed the identical boundary condition with the same material characteristics and calculated all of the findings from these sorts of outcomes.

1. INTRODUCTION

Friction-stir welding (FSW) is a strong-state becoming a member of method (the metallic isn't always melted) that uses a 3rd frame device to sign up for managing surfaces. Heat is generated most of the device and material which results in a very soft area close to the FSW device. It then automatically intermixes the two portions of steel at the vicinity of the joint, then the softened metallic (due to the stepped forward temperature) can be joined the use of mechanical stress (this is completed thru way of means of the tool), similar to becoming a member of clay, or dough.

It is more often than not used on aluminium, and most often on extruded aluminium (non-warmth treatable alloys), and on systems which want advanced weld energy with out a positioned up weld warmth treatment. It become invented and experimentally validated at The Welding Institute UK in December 1991. TWI holds patents at the procedure, the number one being the maximum descriptive.

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Internal Combustion Engine Air-Fuel Ratio Management Utilising an Artificial Neural Network with Sliding Mode Control Designed to Tolerate Sensor Failures

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ABSTRACT

Using artificial neural networks (ANNs) and sliding mode controls (SMCs) for the active and passive components, respectively, this research offers a new hybrid fault-tolerant control system (HFTCS). The suggested system has the potential to provide both post-fault optimum performance and stability against unanticipated quick disturbances. The observer model of an active fault tolerant control system (AFTCS) includes a fault detection and isolation (FDI) unit that estimates bad sensor data using an artificial neural network (ANN). A robust state-machine controller (SMC) is used to construct the air-to-fuel ratio (AFR) controller in the PFTCS component, which enables for fault management within specified bounds without the need for estimate. SMC will be the passive component that responds immediately to faults, while ANN will be the active component that optimises performance post-fault via active compensation. In addition, a Lyapunov stability study was carried out to guarantee the system's steadiness under both typical and abnormal operating settings. The Matlab/Simulink simulation results demonstrate that the suggested controller can withstand errors in both clean and noisy sensor measurements. When compared to prior efforts, the proposed hybrid algorithm is shown to have greater performance.

KEYWORDS: Artificial neural network, sliding mode control, air-fuel ratio control, Lyapunov stability, and fault-tolerant control.

1. INTRODUCTION

Fault-tolerant control systems (FTCS) are regarded as modern control systems to achieve higher reliability and stability. A fault is classified as a deviation from the standard operating value of a plant parameter. Faults in a system can jeopardize the desired operation of the whole system. An FTCS may work under faulty conditions and stay stable; however, performance loss can occur. The FTCS may also be used to maintain stability because of the safety of people, and missionsensitive applications like aircraft, and unmanned air vehicles (UAVs).1–3 Due to variations in architectures and properties, FTCS is divided into two major cate- gories: active and passive. Some symbols and abbrevia- tions related to HFTCS are listed in Tables 1 and 2, respectively.

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Studying how Additive Manufacturing (Am) Modifies the Microstructure and Mechanical Characteristics of Alsi10mg

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ABSTRACT

When compared to layer-by-layer melting, Selective Laser Melting (SLM) is the preferred method for creating complex and unique components using Additive Manufacturing (AM). Optimising the SLM method to create very dense AlSi10Mg alloy components is the focus of this research. Optical microscopy and scanning electron microscopy (SEM) were used to examine the AM produced specimens for macro and micro structural examination, respectively. Additionally, the effect of layer thickness was investigated on the mechanical characteristics of AlSi10Mg alloy components, including micro-hardness and ultimate tensile strength (UTS). Analysis of the microstructure revealed differences in the shape and behaviour of the microstructure at the melt pool border of the deposited layer and further into the layer. Tensile strength was shown to increase with decreasing layer thickness from 60 m to 30 m, most likely as a result of reduced porosity, enhanced surface morphology, and ultra-fine cellular dendritic microstructure. Samples tested in the horizontal direction with a layer thickness of 30 m showed a 24% increase in UTS compared to samples tested with a layer thickness of 60 m.

KEYWORDS: SLM, AlSi10Mg, Layer Thickness, Density, Microstructures, Ultrathin Films, UTS.

1. INTRODUCTION

In recent years, SLM is considered to be one of the most promising technology in various sectors of aerospace and medical industries where the use of parts with complex geometries and light weight and strength of the material demand [1-3]. Unlike conventional manufacturing techniques, Additive manufacturing is a layer-by-layer manufacturing and joining technology to generate a 3D object. In this technique, a layer of metal powder first deposited and then the laser is irradiated on the metal powder causing melting and followed by rapid solidification. The exposure period of laser-material interaction will be in the range of few milliseconds. Thus, AM process is considered to be the high laser power-density with shorter interaction time [5-8]. AM of Al alloy powders have some challenges due to its superior thermal conductivity as well as high reflectivity. Therefore, resultant laser power required to melt Al alloy powder significantly enhanced. Moreover, porosity formation in the Al alloys is more common due to entrapment of oxide inclusions via oxidation resulting in weak spots in the AM built.

The SLM process is characterized by the extremely significant rapid melting and solidification. Thess influence the mechanical properties of the material and their study needs to be addressed.

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The Use of Computer-Aided Design and Computer-Aided Manufacturing Technologies in Dental Work

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ABSTRACT

Information and communication technologies have found their application in the healthcare sector, including the frameworks of modern dentistry. CAD / CAM application in dentistry is the process by which is attained finished dental restoration through fine milling process of ready ceramic blocks. CAD / CAM is an acronym of english words Computer-Aided-Design (CAD) / Computer-Aided-Manufacture (CAM), respectively dental computer aided design and computer aided manufacture of inlays, onlays, crowns and bridges. CAD / CAM technology essentially allows you to create a two-dimensional and three-dimensional models and their materialization by numerical controlled machines. In order to operate more efficiently, reduce costs, increase user/patient satisfaction and ultimately achieve profits, many dental offices in the world have their attention focused on implementation of modern IT solutions in everyday practice. In addition to the specialized clinic management software, inventory control, etc., or hardware such as the use of lasers in cosmetic dentistry or intraoral scanning, recently the importance is given to the application of CAD / CAM technology in the field of prosthetic. After the removal of pathologically altered tooth structure, it is necessary to achieve restoration that will be most similar to the anatomy of a natural tooth. Applying CAD / CAM technology on applicable ceramic blocks it can be obtained very quick, but also very accurate restoration, in the forms of inlays, onlays, bridges and crowns. The paper presents the advantages of using this technology as well as satisfaction of the patients and dentists by using systems as: Cercon, Celay, Cerec, Lava, Everest, which represent imperative of modern dentistry in creating fixed dental restorations.

1. INTRODUCTION

Modern dental practice implies an increased application of information and communication technologies. There are numerous advantages to facilitate the work of the dentist, but also users of dental services that are becoming more demanding in terms of aesthetics, with the clearly expressed desire for the minimum of staying and delaying in the dental office. The computer, as a means of interactive communication, have a greater role in prosthodontics in terms of practice in dental office, but also in dental technical laboratories. Namely, when it is necessary to substitute the removed pathologically-altered tissue, and producing a fixed prosthetic inlays, onlays, crowns and veneers are indicated, or when it is necessary to make up missing teeth, and therefore bridges are prodcued, it comes to the fore the application of CAD / CAM technology.

In the early 90s, over 70% of private dental practices in the United States used PCs [1]. Undoubtedly the advantage of such a work organization is to increase the speed of work, communication with patients and reducing the space for data storage [2]. An important role is also to reduce the possibilities of entering wrong, illogical or incomplete data [3]. This

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A STUDY ON RECYCLING AND RESUSE OF MUNICIPAL SOLID WASTE IN CONSTRUCTION INDUSTRY

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ABSTRACT

The municipal solid waste incineration ash reduces are worldwide studied topic over the last decades, so that utilize the municipal solid waste is the one of the possibilities is to use MSW ash in concrete production as it is done the bottom ash features the most convenient composition in concrete and it is available in highest amounts among the MSW ashes the bottom ash was used as partial replacement of cement in concrete strength has to find, if the prepared concrete will get sufficient strength or not. The behavior of concrete with the bottom ash is differed from the control material due to presence of sulphates and chlorides. This project about the feasibility of using municipal solid waste ash as a replacement of cement in M25 grade concrete. The municipal solid waste ash proportion utilized here is 0%, 5%, 10%, 15% and 20% by the weight of cement, weight of fine aggregate, coarse aggregate and water cement ratio is kept constant. The investigation concentrated on the test of Harden and Fresh properties of concrete. On the basis of experimental results of this investigation, it is concluded that the Optimum percentage of MSW ash replacement of cement in the concrete is 5%.

Keywords: *MSW (municipal solid waste), M25 grade concrete.*

1. INTRODUCTION

1.1 General

The incineration of municipal solid waste has significant benefits as it can reduce the volume and the mass of the waste by about 90% and 70%, respectively. Municipal solid waste is collected and burned in an incinerator; the by-products of the combustion process are collected. Bottom ash typically accounts for 80% of the whole amount of by-products in the MSWI plants. Municipal solid waste incinerator bottom ash is the ash that is left over after waste is burnt in an incinerator. This ash contains glass, brick, rubble, sand, grit, metal, stone, concrete, ceramics and fused clinker as well as combustive products such as ash and slag. Cement and aggregate, which are the most important constituents used in concrete production, are the vital materials needed for the construction industry. This necessity led to a continuous and increasing demand for natural materials. Parallel to the need for the utilisation of the natural resources emerges a growing concern for protecting the environment and need to preserve natural resources, by using alternative materials that are either recycled or discarded as a waste. One of the possibilities is to use Municipal Solid Waste ashes in concrete production.

Cement and aggregate, which are the most important constituents used in concrete production, are the vital materials needed for the construction industry. This inevitably led to a continuous and increasing demand of natural materials used for their production. Parallel to the need for the utilization of the natural resources emerges a growing concern for protecting the environment and a need to preserve natural resources, such as aggregate, by using alternative materials that are either recycled or discarded as a waste.

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ADAPTIVE HIERARCHICAL CYBER ATTACK DETECTION AND LOCALIZATION IN ACTIVE DISTRIBUTION SYSTEM

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ABSTRACT

Since dispersed renewable energy sources are increasingly being integrated into the grid, developing a cyber security plan for active distribution systems has become more difficult. This article describes an approach to using electrical waveform analysis to identify and localise cyberattacks in distributed active distribution systems. The cornerstone for cyber-attack detection is a sequential deep learning model, which allows the identification of even the slightest intrusions. The targeted cyberattack is initially localised inside the estimated cyberattack sub-region in a two-stage process. We present a network splitting approach based on a modified form of spectral clustering for "coarse" localisation of hierarchical cyber-attacks. To further localise the origin of a cyber assault, it is advised to define a number of waveform parameters and apply a normalised effect score based on statistical metrics of the waves themselves.Finally, a thorough quantitative assessment based on two case studies demonstrates that the proposed framework yields accurate estimations in contrast to both classic and state-of-the-art methods. Search Term Suggestions: Support Vector Machine; Random Forest; Gradient Boosting; Logistic Regression; Cyber Attack Detection.

I. INTRODUCTION

Systems that store or process sensitive information have been a frequent target of more sophisticated cyberattacks in recent years. Protecting essential national infrastructures against cyberattacks is a major issue for businesses and governments alike since increasingly important data and services rely on them. Intrusion detection systems (IDS) are used as a supplement to primary preventative security measures like authentication and access control.Using a predetermined set of rules or patterns, IDS can tell the difference between safe and dangerous actions[1].

The increasing prevalence of IoT-enabled applications, such as smart grids, makes power electronics converters increasingly vulnerable to cyber/physical assaults. There is a vital need to develop methods for power electronics converters to detect and identify cyber/physical assaults in many safety-critical applications, yet cyber expertise is scarce in the power electronics business. If these malicious attacks are not detected quickly, they may result in catastrophic failure and significant financial loss [2]. A hierarchical design for anomaly detection in smart grids, using data from a large number of smart metres. The proposed technique is meant to spot outliers at the transmission, substation, and distribution levels of the smart grid [3].

The cyberphysical safety of today's electric vehicle (EV) powertrain technologies. A number of vulnerabilities in EV power train systems are discussed in this research [4]. These include vulnerabilities in the communication networks, electric motor control, and battery management system. Support vector machines (SVMs) are a hierarchical intrusion detection system (IDS) that may be used to ICS/SCADA networks. The proposed method is meant to detect and classify different forms of intrusion, including reconnaissance assaults, denial-of-service attacks, and data alteration attacks. In order to locate single-phase grounding defects in distribution networks, the models use a data-driven method based on synchronised phasor measurement to discern between normal and abnormal network

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AN EFFICIENT AND SECURE G-CLOUD-BASED FRAMEWORK FOR GOVERNMENT HEALTHCARE SERVICES

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ABSTRACT

With the advancement of technology and the confinements of the good old medical services framework, an unplanned structure for social insurance is needed.. We've witnessed a growing interest in and preference for cloud-based software development in the human services sector to manage and meet existing and future demands in social insurance administrations. We propose a cloud-based framework for medical services that is adaptable, safe, efficient, practical, and protected. For the administration EHR framework, we've presented a safe and effective structure in which fine-grained access control is commonly controlled by multi-authority ciphertext property based encryption (CP-ABE), close by many levels of information structure to permit access control arrangements. E-government distributed computing is a major advantage for Saudi Arabia's top officials, who will be able to grow up their social insurance sector through the proposed framework.

INDEX TERMS: Cloud Computing, Electronic Health Record, Security, Attribute-based Encryption, Ciphertext policy, Identity Proofing, Authentication, Authorization

1.INTRODUCTION

It's challenging to provide comprehensive care that includes illness prevention as well as treatment in most Arab countries' healthcare because of a lack of optimal utilisation of available human and material resources. The World Health Organization has reported the frequency of various diseases in Arab countries, including diabetes, hepatitis, and parasitic diseases including histoplasmosis and malaria (WHO). In many cases, recognising health problems early enough allows patients to avoid or reduce the severity of their symptoms. These difficulties include planning, operational, and technical considerations, all of which have an impact. If these difficulties can be overcome, we should expect a significant improvement in health care. It is difficult for medical institutions to keep comprehensive control of their operations and resources since the most cutting-edge software for managing all elements of technical and administrative healthcare is inadequate and underutilised. The performance of these high-end computers does not depend on the storage or software used to store their data. These systems' effectiveness hinges on their capacity to be accepted by a wide range of users, including healthcare practitioners, such as doctors, nurses, and technicians, as well as administrators, who have diverse information needs and priorities.

2.LITERATURE SURVEY

2.1 Q. Huang, Y. Yang, and M. Shen, "Secure and efficient data collaboration with hierarchical attribute-based encryption in cloud computing," Future Gener. Comput. Syst., vol. 72, pp. 239–249, Jul. 2017.

With the expanding pattern of redistributing information to the cloud for productive information stockpiling, secure information coordinated effort administration including information

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BLOCK CHAIN BASED CERTIFICATE VALIDATION

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ABSTRACT

In the digital world, each and everything is digitalized in which the certificate of SSLC, HSC, and academic certificate are digitalized in the educational institution and provided to the students. Students are difficult to maintain their degree certificates. For the organization and institution, verification and validation of certificates are tedious and cumbersome. Our project will help to store the certificate in the blockchain system and provide security. First, the paper certificates are converted into digital certificates. The chaotic algorithm is used to generate the hash code value for the certificate. Then the certificates are store in blockchain. And these certificates are validated by using the mobile application. By using blockchain technology we can provide a more secure and efficient digital certificate validation.

I. INTRODUCTION

Advances in information technology, the wide availability of the Internet, and common usage of mobile devices have changed the lifestyle of human beings. Virtual currency, digital coins originally designed for use online, has begun to be extensively adopted in real life. Because of the convenience of the Internet, various virtual currencies are thriving, including the most popular—Bit coin, Ether, and Ripple —the value of which has surged recently. People are beginning to pay attention to block chain, the backbone technology of these revolutionary currencies. Block chain features a decentralized and incorruptible database that has high potential for a diverse range of uses. Block chain is a distributed database that is widely used for recording distinct transactions. Once a consensus is reached among different nodes, the transaction is added to a block that already holds records of several transactions. Each block contains the hash value of its last counterpart for connection. All the blocks are connected and together they form a blockchain. Data are distributed among various nodes (the distributed data storage) and are thus decentralized. Consequently, the nodes maintain the database together. Under blockchain, a block becomes validated only once it has been verified by multiple parties. Furthermore, the data in blocks cannot be modified arbitrarily. A blockchain-based smart contract, for example, creates a reliable system because it dispels doubts about information's veracity. Because information technology has developed rapidly in recent years, data protection is more necessary than ever.

Graduates, whether they choose to continue studying or start job hunting, require various certificates for interviews. However, they often find that they have lost their educational and commendation certificates. Reapplying for hard copies can be time-consuming because certificates are granted by different organizations and in-person application may be necessary. By contrast, applying for an e-copy can save paper and time. By providing information for identity verification, graduates are able to apply for any certificate easily. Nevertheless, because of this convenience,

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DEEP LEARNING APPROACH FOR SUSPICIOUS ACTIVITY DETECTION FROM SURVEILLANCE VIDEO

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Abstract

The importance of video surveillance in modern society cannot be overstated. Once AI, ML, and DL were introduced, the technologies were already too far forward. Utilizing the aforementioned permutations, several methods have been developed to discern between different types of suspicious behaviour based on the live monitoring of film. Human conduct is the most erratic, and it's sometimes hard to tell whether an unusual pattern of behaviour is really typical. An alarm message is sent to the appropriate authority if the system predicts suspect behaviour in a school setting, and if the activity is normal, no alert is sent. In many monitoring applications, a series of frames taken from a video are used in rapid succession to conduct checks. The whole structure may be broken down into two halves. First, a classifier uses video frame computations to acquire features; next, using those characteristics, a prediction of whether a frame is suspicious or not may be made.

***Index**: Video Surveillance, deep learning,*

1. INTRODUCTION

Several real-world contexts benefit from human behaviour detection applications including intelligent video surveillance and purchasing behaviour analysis. A wide variety of environments, both inside and outdoors, are ideal for installing video surveillance systems. A key component of safety is constant monitoring. The use of security cameras has grown commonplace in modern society for obvious reasons of personal safety and security. The Indian government has made electronic monitoring a central part of its growth plan. The Internet of Things in India. Video monitoring is still a key component. It's easier to keep an eye on things when there are fewer people to do it, and you can perform audits more cheaply and easily using video surveillance. So far, humans have been doing all of the tracking. Dealing with such a large volume of video data may be taxing on human resources, and errors are inevitable throughout the manual curation process. The system's efficiency suffers severely as a result. Thanks to advances in video surveillance automation, this problem has been mitigated. It is now humanly impossible to manually monitor every single event captured by a CCTV (Closed Circuit Television) camera. Manually looking for the same event in the recorded video is a time-consuming process, even if the event has already occurred. An emerging field in automated video surveillance is the examination of footage for signs of unusual activity.

Automatically and intelligently recognising

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EMBEDDED NIGHT- VISION SYSTEM FOR PEDESTRIAN DETECTION

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ABSTRACT

The paper describes the use of thermal camera and IR night vision system for the detection of Pedestrians and objects that may cause accident at night time. As per the survey most of the accidents cause is due to low vision ability of human at night time, which leads to most dangerous and higher number of accidents at night with respect to day time. This system include the IR night vision camera which detects the object with the help of IR LED and photodiode pair, this camera have capability to detect the object up to 100m. The thermal camera detects the heat generated by any of the object like cars, Human animals etc. which gives us the facility to detect the object for higher range and with low reflective surface where IR night vision may fails. With the use of these two cameras mounted on car which helps the driver to drive safely. In this system, HOG (Histogram of orientated gradients) algorithm and support vector machine (SVM) is performed with the help of OpenCV in Matlab and EmguCV in Visual Basic 2012. The system is tested on the video recorded using these cameras, and got good and efficient result. And this system is cost efficient and easy to implement.

Key Words: *Thermal and IR Night vision, OpenCV, Video Processing, Object and Human Detection, Automobile Safty.*

I. INTRODUCTION

Humans are the most intelligent creation of god. Human's one of the most important discover is transportation systems. But with the increase of population, needs and desires of human being road transportation is getting bit one of the major reasons of human made death. Pedestrian Detection system is now requirement in the new era of transport. Is ancient time we use to travel by bullock cart or on a horse which does not causes any causality. But now-adays people have 2-3 vehicles at their house which increases the traffic at roads and accidents and eventually deaths cause by it.

In this system, we have tried to reduce the rate of accidents by more than a half. This project help to build a good and efficient and cost affective system for car/ automobile manufacturers to develop more safe and luxuries vehicles. As the population and needs of human being is increasing the numbers are increasing government is trying to decrease the rate of causality and death. In recent years, According to survey 38% of fatal accidents in the European Union occur in darkness places, instead the fact that, the traffic during nights time is several times smaller than that on a day. This means that the risk of an accident in darkness increased. This stats has a strong relation and effect on the pedestrians. Currently, the pedestrians are of about 20 % of all traffic accidents. More than half of pedestrian deaths take place at night (51 %). As per survey by The Times of India, in various major city of India (figure 1),we can see that 60% of accident occur at

Delhi is at night time. So it is more necessary to find a good solution for reducing the number.

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HUMAN ACTIVITY RECOGNITION USINGDEEPLEARNING

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ABSTRACT

Human activity recognition using deep learning techniques has become increasing popular because of its high effectivity with recognizing complex tasks, as well as being relatively low in costs compared to more traditional machine learning techniques. This paper surveys some state-of-the-art human activity recognition models that are based on deep learning architecture and has layers containing Convolution Neural Networks (CNN), Long Short-Term Memory (LSTM), or a mix of more than one type for a hybrid system. The analysis outlines how the models are implemented to maximize its effectivity and some of the potential limitations it faces.

Keywords: *Human* Activity Recognition, Deep Learning

I. INTRODUCTION

Human activity recognition (HAR) has been a popular topic of research [1] for its high usability in fields such as the medical industry. Its ability to be used in health care systems [2] has made it increasingly popular, aiding physicians in making better decisions and allowing better allocation of medical resources based on automated monitoring. HAR's reach has also gone beyond the medical industry and is used by people just to monitor [3] their physical activities or can also be used to detect anomalous events among the elderly [4], such as falls. Furthermore, as human exercise is important for people of all ages, but especially for the elderly, there is a need to be able to monitor such events frequently to track fitness, human capabilities and for detecting anomalous events. The use of more traditional machine learning algorithms has become less popular as more efficient and capable deep learning methodologies are developed. Popular usages of deep learning algorithms include Convolution Neural Networks (CNN), Long Short-Term Memory (LSTM), Recurrent Neural Networks (RNN) and more.

II. BACKGROUND

Exploring how different data collection, data preprocessing and deep learning algorithms and effect a model's capability to recognize activities is important for determining important factors [6] and conserving resources associated with the implemented models. Human activity recognition is often divided into two categories: vision-based recognition [7] and sensor-based recognition [8]. As the name suggests, vision-based recognition models utilize one or more cameras for collecting video samples of human activities. Work with vision-based models include using multiple views for determining a single action [9] or a single view, treating the video sample as a human silhouette for making predictions [10]. Sensor-based recognition is a far larger area of research [11] and application as sensors from mobile devices or body attachments are far more obtainable and efficient than using cameras for both training and real-world applications [12]. Some popular datasets that are used for models include the OPPORTUNITY [13], Skoda Checkpoint [14], UCI-HAR [15], WISDM [16], MHEALTH [17] and PAMAP2 [18] datasets. Within the world of human activity recognition, some of the most popular machine learning algorithms [19] have been identified for its high accuracy and robustness across different datasets. Such algorithms include the Support Vector Machine (SVM), k-Nearest

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IDENTIFYING BRAIN TUMOUR USING MRI IMAGES

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ABSTRACT

The detection, segmentation, and extraction from Magnetic Resonance Imaging (MRI) images of contaminated tumor areas are significant concerns; however, a repetitive and extensive task executed by radiologists or clinical experts relies on their expertise. Image processing concepts can imagine the various anatomical structure of the human organ. Detection of human brain abnormal structures by basic imaging techniques is challenging. In this paper, a Fully Automatic Heterogeneous Segmentation using Support Vector Machine (FAHS-SVM) has been proposed for brain tumor segmentation based on deep learning techniques. The present work proposes the separation of the whole cerebral venous system into MRI imaging with the addition of a new, fully automatic algorithm based on structural, morphological, and relaxometry details. The segmenting function is distinguished by a high level of uniformity between anatomy and the neighboring brain tissue. ELM is a type of learning algorithm consisting of one or more layers of hidden nodes. Such networks are used in various areas, including regression and classification. In brain MRI images, the probabilistic neural network classification system has been utilized for training and checking the accuracy of tumor detection in images. The numerical results show almost 98.51% accuracy in detecting abnormal and normal tissue from brain Magnetic Resonance images that demonstrate the efficiency of the system suggested.

Keywords: *Brain Tumor Detection, Classification, Segmentation, Deep learning, ELM.*

I. INTRODUCTION

The Importance and Significance of Detecting Brain Tumors

In clinical studies on brain anatomy, MRI has become a crucial tool [1]. The high resolution, contrast, and clear separation of the soft tissue enable doctors to identify specific diseases accurately [2]. For understanding pathology, for assessing evolutionary trends, for preparation, the best surgical method or alternatives possible, an exact segmentation of the pathological and healthy tissues that comprise the Magnetic Resonance image are necessary [3]. Automated segmentation methods are a helpful solution to help management with unreliable degrees of automation to trace the boundaries of various tissue areas, and by allowing automated volumetric of pathologic MRI signal analysis [4]. The tumor represents uncontrolled cancer cell growth in any part of the body, while a tumor in the brain is an abandoned brain cell growth Benign or malignant may be a brain tumor [5]. The benign brain tumor is structurally similar and does not include active (cancer) cells, while malignant (heterogeneous) tumors contain active (cell) cells [6].

Meningioma and Gliomas are low-grade cancer known as benign tumors and high-grade tumors classified as malignant tumors, including astrocytoma and glioblastoma [7]. Glioblastoma is the most malignant type of astrocytoma, the most elevated glioma [8]. Glioblastoma is unique to all other forms of the tumor class from the abnormally rapid growth of blood vessels and the development of necrosis (dead cells) moreor less the tumor [9]. In cancer treatment plans and cancer research, it is essential tosegment the pathological and healthy brain tissues from MRIwith their sub-regions [10]. The segmentation of images remainsa crucial task for all medical image processing techniques,which consists of eliminating regions of interest from

MACHINE LEARNING FOR PLANT DISEASE IDENTIFICATION, TRACKING AND FORECASTING FOR FARMERS

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ABSTRACT

Plant diseases are a major problem that threaten farmers, consumers, the environment, and the global economy. In India, field crop failure due to pathogens and pests alone costs farmers 35% of their harvest. Pesticides represent a serious threat to human health since many of them are highly toxic and can be amplified by living organisms. Avoiding these consequences is possible with proper disease detection, crop monitoring, and individualized treatment plans. Typically, agricultural experts would first seek for visible symptoms of a disease. Meanwhile, farmers have little access to experts. When it comes to automatically diagnosing, tracking, and forecasting illnesses, our effort is the first collaborative, all-encompassing platform of its kind. Farmers may use a smartphone app to rapidly and accurately diagnose diseases by taking pictures of affected plant parts. Real-time diagnosis is now possible using cutting-edge AI algorithms for cloud-based image processing. The AI model continuously refines its performance based on data from user-uploaded images and expert critiques. Farmers can also talk to local experts using the platform. Using a database of geo-tagged pictures and micro-climate variables stored in the cloud, disease density maps with projections of spread are generated for preventative measures. Using a web interface, specialists may do geographically-based illness assessments. In our research, a convolutional neural network (CNN) artificial intelligence model was trained using large disease datasets derived from images of plants collected in a decentralised fashion over the course of 7 months from a variety of farms. After using the automated CNN model to diagnose test photographs, plant pathologists validated the results and gave their stamp of approval. Over 95% accuracy was achieved in the diagnosis of illnesses. To help farmers and agricultural experts manage illnesses in a wide range of crop plants in order to sustainably harvest their crops, we have developed a novel, flexible, and easily accessible tool.

Keywords: CNN, Machine learning, Neural Network. Artificial Intelligence

1. INTRODUCTION

An integral component of human existence is agriculture. It is crucial to increase agricultural, fruit, and vegetable yield in emerging nations with dense populations, like India. Both the number and quality of the items provided affect the general public's health. Issues include the spread of diseases that may have been stopped with early identification hinder production and food quality. A number of these illnesses spread widely, completely eradicating agricultural production. Human-assisted disease detection is ineffective and unable to meet the enormous demand due to the dispersed nature of agricultural areas, the low educational levels of farmers, the shortage of relevant knowledge, and the difficulty in acquiring access to plant pathologists. It is necessary to automate crop disease diagnosis with technology and introduce low-cost, accurate machine-aided diagnostics that are readily available to farmers in order to address the shortcomings of human helped disease detection. Robotics and computer vision technologies have developed to the point

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QR BASED ATTENDANCE SYSTEM

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ABSTRACT

In higher education institutions, student participation in the classroom is directly related to their academic performance. However, the majority of student attendance registration is still conventionally done, which is tedious and time-consuming, especially for those courses that involve large numbers of students. Over the years, attendance management has been conducted manually at most of the universities. To overcome the manual attendance issues, we proposed and implemented a smart attendance system with the aim to encourage the potential use of the Quick Response (QR) code as a future attendance management system, to track and record student attendance in lectures and exercises for all relevant courses, as an aim of this paper.

Keywords *– QR Code, attendance, system, professor, student.*

I.INTRODUCTION

Nowadays, it is very important to finish the job fast, learn something new, get higher results as easy and efficiently as you can. Every sector, especially in the education process and in the business world, needs management systems that will enable them to have adequate control and management in the development of learning or work. Considering all these advantages and benefits, we thought that the process of education at the university, in particular, needs an online system to manage student attendance.

Among others, regular attendance is a basic and most important criterion throughout the education system. Consequently, the student might lose the right to sit an exam if attendance criterion is not met. Moreover, if students exceed the number of allowed absences, they might also lose the right to sit final exams. Given that, the manual method which is currently used, give space for more calculation errors.

We proposed and developed a better web-based system to help overcome such issues. It is fully responsive to mobile phones, tablets and various computer systems users. The proposed model provides data security and whole class or individual student attendance data can be accessed quickly and easily, moreover, the report is automatically generated by the professor. The purpose of the internet -based attendance system is to computerize the traditional way of registering attendance and to provide an easier and smarter way to track institutions attendance nowadays, based on a unique code for each professor and student known as QR code. At the beginning of each course, to confirm their attendance, users (professors and students) are required to scan their unique QR code assigned to them during or at the beginning of each lecture, using QR reading devices within the classrooms. Based on this, the

ROBOTIC BOMB DETECTION AND DISPOSAL APPLICATION USING ARDINO

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ABSTRACT:
Countless number of news items dealing with injured trained personnel or military people who loses their lives during defusing bombs appears daily in newspapers around the world. Here a robotic arm is designed to detect and dispose a bomb which is located around the range of 100m with safety and to provide a security for the bomb disposal squad against risks. The designed robot is manually controlled by the user through Personal Computer (PC).The buzzer alarm when the sensor detects a metal. The metal is examined with the help of checks whether it is a bomb or not. If the detected metal is a bomb then the user controls the robot through mobile app and disposes the bomb using LASER. Arduino Mega board, DC motors, Buzzer, LASER forms a part of designed robot. Initially setup is simulated using proteus software and then entire hardware setup is controlled through personal computer.

I. INTRODUCTION

Now-a-days the need for military robots has increased enormously. Thus competent robots begin to evolve. A part of Robotic platform such as remotely operated vehicles performs hazardous activities in civilian and military environment. Developing and employing such robots could substitute humans by performing many dangerous functions. The information about the observed environment is passed to the human operator. The machine is controlled by the human operator through teleoperation.For both military and police forces it is a greatest menace to hold explosive devices. Recent developments have yielded new interest in bomb disposal robots and techniques. The aim is to disarm the device with little human contact. The bomb must be safely disarmed without being exploded. The bomb should be detonated in a safe area ensuring nothing around in that area. Here electrically powered and distantly controlled robot is designed to locate, handle and destroy hazardous objects.

II.LITERATURE SURVEY

Paper [1] discusses use of robot for bomb detection and disposal for aid to risky military fields. The robot consists of robots arm, Arduino microcontroller, metal sensor, buzzer and other components. The robot is controlled through Personal Computer.

Paper [2], here they have used RF technology to control the robot wirelessly. Arm is used that detect bombs and tracking position of bomb by using GPS (Global Positioning System). The system consists of Arduino microcontroller and different sensors. Here wireless camera is used to make controlling easy and accurate.

Paper [3] illustrates how human hand movements could direct the robotic motor. Here for operation hand wave mode or gesture controlled mode are used.

Paper [4], Robots are referred as Unmanned ground vehicles or self-controlled robots as it finds application in Border patrol, surveillance and in active combat. The robot is controlled through human commands.

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SMART SHOPPING TROLLY IN SUPER MARKET

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ABSTRACT:

Nowadays, buying and searching for products at shopping malls are turning into a daily activity in cities. We can see many number of people shopping at malls on holidays and weekends. The rush happens when there are special offers and discounts. People purchase completely various things and place them in trolley. After total purchase, one must visit the billing counter for billing and making payments. In the billing counter, the cashier prepares the bill victimization bar code reader that might be a time overwhelming method and leads to long queues at billing counters. This paper targeted to minimize the Queue at a billing counter in a shopping mall. The smart shopping cart does the same by displaying the total price of the product kept inside the cart. In this way, the customer can directly pay the amount either in-app or in the billing counter and leave with the commodities he/she has bought. The hardware relies on Arduino Uno, RFID Reader Module, RFID Card, and Buzzer. It eliminates the normal scanning of products at the counter and in turn speeds up the entire process of shopping is easy and also with this system, the customer shall know the total amount to be paid. Hence the customer can plan his shopping only by buying the essential commodities according to his savings. Since the entire process of billing is based on RFID, so it reduces the possibility of human error substantially. The system also has a feature to delete the scanned products by customers to further optimize the shopping experience.

I.INTRODUCTION OF PROJECT

Nowadays a number of shopping mall has increased around the world. Sometimes customers have problem regarding the incomplete information about the product on sale and waste of time at billing counters[1]. In existing system, shopping malls are using barcode standards [2]. This technique has replaced the previous manual system however has limitations. Barcode scanner requires a manual tracking, whereas RFID can be automatically tracked [3]. Barcodes additionally need a considerable quantity of manpower and human effort. Barcodes will get broken simply. Not solely this, The Barcode system needs the client to the square in long queues so as to induce their product scanned and their bills generated. This method will persuade be wearisome and it additionally consumes heaps of your time of the shoppers, thereby adding to their frustration. With such a big amount of disadvantages there too, the Barcode system remains in use. It is obvious that there is a desire to bring on a better and a lot of economical systems. The advent of newer techniques like RFID technology and wireless networks have makes the process of shopping at a faster pace, making it more efficient as well as making it more transparent[4].

Smart shopping cart using Arduino and RFID may be a new advancement in the field of Supply Chain Optimization. This method shall not only to skip the long queues in supermarkets and malls but also save plenty of your time for the purchasers. The system also helps the customer in saving money. The system uses RFID tags instead of Barcode tags which are much more efficient and powerful when it involves scanning of products. The device developed using Arduino

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SMART WATERING SYSTEM

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ABSTRACT:

Water is one of the essential parts of life. Water pollution is one of the big problems to the world. In order to ensure the safe supply of the drinking and useful water for different purposes like agricultural, the water should be monitored. This paper presents a design of a low cost system for real time monitoring of the water. This paper presents an IoT device which helps to manage and plan the usage of water. This system can be easily installed and maintained for long run. The level sensor is placed on the tank which continuously monitors the water level in real time. Whenever the person reach water dispenced automatically. This information will be updated in the cloud and user can analyze the amount of water.

I.INTRODUCTION OF PROJECT

Water is one of the most important basic needs for all living beings, but unfortunately, a huge amount of water is being wasted because of uncontrolled use and exploitation of water resource. Kerala averages rainfall of 3,000 mm a year. The general impression was that among all the states in India, Kerala had ample drinking water, but it's not the case. There are 1,164 problem villages without the adequate supply of drinking water. Even though Kerala has 44 rivers spanning its lush green landscape. Together, they contribute an annual discharge of 72, 00 million cubic meters of water which is unused to the Arabian Sea. One of the main reasons for the shortage is poor management of water. Overflowing water tanks in residence, schools, colleges, Municipal overhead tanks, Hospitals etc. can contribute to the massive amount of water wastage. If we can control this we can save large amounts of water. Conventional water tanks can neither monitor nor control the water level in the tank. As of now, the water level has to be manually checked and refilled according to the requirements.

II.LITERATURE SURVEY

In the studies from [1] the author proposed that an IoT based water monitoring system that measures water level in real-time. The model is based on idea that the water level can be very important parameter when it comes to the flood occurrences especially in disaster prone areas. A water level sensor is used to detect the desired parameter, and if the water level reaches the parameter, the signal will be feed in real time to social network like Twitter.

In the [2] the author proposed that in recent times, tremendous growth of Internet of Things applications is seen in smart homes. The large variety of various IoT applications generally leads to interoperability requirements that need to be fulfilled. Current IoT project is achieved using physical platforms that lack intelligence on decision making. A architecture that implement Event-Condition-Action (ECA) method is proposed to solve the management of heterogeneous IoTs in smart homes. The proactive architecture, developed with a core repository stores persistent data of IoTs schema, proved to be an ideal solution in solving interoperability in smart homes.

In [3] the paper proposed that drinking water the quality needs to be monitor in real time. In this paper we present a design and development of a low cost system for real time monitoring of the water quality in IoT (internet of things). The system comprises of many sensors is used to measuring physical and chemical parameters of the water.

In [4] the author shown how to monitor the water level of water systems such as water tanks, rivers, ground water table, and bore wells remotely. They also shown that how to control the working of pump automatically and remotely. It can be

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VEHICLE COLLISION AVOIDANCE SYSTEM

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ABSTRACT

Nowadays, the number of accidents is so high and uncertain. Accidents causes worst damage, serious injury and even death. These accidents are mostly caused by delay of the driver to hit the brake. Preventive measure such as improving visibility, auto headlights, windshield wipers, tire traction, etc. were deployed to reduce the probability of getting into an accident. Now we are at the stage of actively avoiding accidents as well as providing maximum protection to the vehicle occupants and even pedestrians. Hence in this paper, we make an attempt to propose a new automated vehicle collision avoidance system. This project is designed to develop a new system that can solve this problem where drivers may not brake manually but the vehicles can stop automatically due to obstacles by using sensors. Thus, this paper focuses on the development of a sensor based embedded system that can assist the drivers to avoid any sort of collision on the road in order to save the precious lives and also to prevent the financial loss

I.INTRODUCTION OF PROJECT

Collision avoidance systems concentrates on advanced ideas such as pre-crash sensing, an ultrasonic sensor is used to sense the object in front of the vehicle and gives the signal to the microcontroller unit. Based on the signal received from the ultrasonic sensor, the microcontroller unit sends a signal to the braking unit for applying the brake automatically. A collision avoidance system, also known as a pre-crash system, forward collision warning system, or collision mitigating system, is an automobile safety system designed to prevent or reduce the severity of a collision. It uses radar (all-weather) and sometimes laser (LIDAR) and camera (employing image recognition) to detect an imminent crash. GPS sensors can detect fixed dangers such as approaching stop signs through a location database. Once an impending collision is detected, these systems provide a warning to the driver. When the collision becomes imminent, they take action autonomously without any driver input (by braking or steering or both). Collision avoidance by braking is appropriate at low vehicle speeds (e.g. below 50 km/h (31 mph)), while collision avoidance by steering may be more appropriate at higher vehicle speeds if lanes are clear. Cars with collision avoidance may also be equipped with adaptive cruise control, using the same forward-looking sensors According to the global road safety partnership annual report 2014 [1], as many as 1.24 million people died each year due to various road accidents occurring throughout the world. Apart from the above-mentioned death toll, almost50 million people become victim of critical life-altering injuries. This is a global humanitarian disaster and this is 8th leading cause of the death globally. According to the World Health Organization, road traffic injuries caused an estimated 1.35 million deaths worldwide in the year 2016.[6] According to the 2013 global survey of traffic collisions by the UN World Health Organization, India suffered a road fatality rate of 16.6 per 100,000 people in 2013. India's average traffic

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VEHICLE POLLUTION MONITOR USING IOT

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ABSTRACT:

Pollution has a significant part in the degradation of our planet. Quick industrialization, rapid urbanisation, rapid population expansion, a dramatic increase in automobiles on the road, and other human activities have disrupted the natural environment's balance. It alters the climate's quality, and season change is caused by build-up of the greenhouse gases in the aerosphere. Global warming, which is produced by the release of greenhouse gases, is one of the most serious environmental issues confronting the globe today. CO2, which is a main component of the circumstances, is causing the globe's surface to warm. Observing and regulating these seasonal changes is a major problem in saving our ecosystem. The transportation sector is a main source of air pollution in urban cities, particularly in growing countries such as India. This project uses multiple sensors, including a gas sensor located at the vehicle's exhaust, to measure pollution limits in real time. The information collected checks the standard limits and is sent to the vehicle operator via the Global System for Mobile Communication module (GSM) and the cloud using Internet of Things (IoT).

I.INTRODUCTION OF PROJECT

In India pollution is the one of the dangerous thing in society. The government is trying to control it but day by day itis going out of control. The Delhi government brought odd even number plate scheme but it does not work well. So we aimed our project to monitor vehicle pollution, by using IoT. IoT is one ofthe most dominating technology of 21st century. IoT means the devices connect with each other using wireless network or internet. In today's era internet has reached everywhere and it has become part of human life. According to a research 20 billion devices have connected with each other using IoT. In our system internet is doing major role along with raspberry pi 3. Raspberry pi 3 is a system on chip device which has developed for IoT application It is a credit card size device. It has 1.2GHz ARM cortex processor. It has 64 bit processor. It has inbuilt 1GB RAM and expandable SD card to install Linux operating system. The system and Raspberry is connected to the internet using Wi-Fi modules and it helps to system to mailtheGPS location to RTO. If pollution has been detected then RTO will warn to user /owner to maintain the vehicle. If user do not maintain the vehicle, then RTO can block his vehicle using IoT.

II.LITERATURE SURVEY

Vehicle pollution monitoring and controlling using IoT, December -2015 BRS.PRASANNA KUMAR1, MADDIRALA SRI RAMA SEKHAR2, MYLA LOVA KIRAN VERMA3

This paper gives us , a novel solution is presented to monitor and control the pollution at the traffic signaling lights. A simple wireless embedded chip is inserted in the personal vehicles to control the ignition on and off remotely. Depends upon the pollution level measured from sensors at the traffic signaling,the operator will send command to the wireless traffic pollution control system.

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WOMEN SAFETY SYSTEM WITH PORTABLE VISVUAL MONITORING SYSTEM

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ABSTRACT:

Women safety becomes the topmost priority of Indian government, as considering the increasing number of crime against women. Thus, it seems necessary to take a step against the crime. In today's world, people are using smart phones a lot and hence, we are making use of smart phone for the security purpose. The unique feature of this application is to send message to the contacts which has Beed registered. After the button clicked on the device, the application can continuous track the location of user who is in danger. Study of crime data can help us analyze crime pattern and important hidden relations between the crimes.

I.INTRODUCTION OF PROJECT

A woman is a symbol of love, purity, knowledge, sacrifice, etc. peace and prosperity lie in the society where a woman is happy and honored. Remembering the goddesses you bow down to in the same house where you raise your hand at the actual goddess of your home.Nowadays, women are keeping pace with men in life, unfortunately at cost of being subjected to abuse, harassment, and violence in public and even at their own houses. They cannot step out of their houses at any time, They cannot wear clothes as per their wish, nor can they even go for work in peace.This all takes away their freedom but also loose their confidence and dreams. Due to the above reasons, it is quite apparent that there is a striving need for women security in the country.In past decades, women won't step out from their houses to work,so there was more safety.But in present scenario,women want to be employed,and they want to work outside.But there is lack of safety

One of the third of the women may suffer from violence in her lifetime. Such incidents are more common nowadays.There are many systems that have been built to provide safety foe women.There cannot be cop who always guarding the women,but there can be safety measures which women can used by them. This paper, therefore, aims to apply the current trend in technology, IOT. The Internet of Things is an ecosystem of physical objects that are accessible through the web. It refers to the ever-growing network of physical objects that feature an IP address for internet connectivity. According to National Crime Records Bureau, crime against women has significantly increased in recent years. We illustrate that how social development may lead to crime prevention. So we are developing the system which can used to detectthe crimes for the area where the person or user currently stand.

II. LITERATURE SURVEY

Women Safety Devices and Applications,july 2018[1] : In this paper,paper involves few precautionary devices and applications in order to prevent problems faced by women.It helps the women deal with the problems faced in the past. The safety and security of a woman can never be at rest, no matter what new device is on the market or no matter how nice a new

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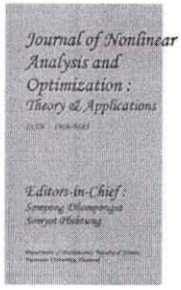

A STUDY ON WORKABILITY AND STRENGTH PROPERTIES OF FLYASH BASED SELF COMPACTING CONCRETE OF GRADE M20

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ABSTRACT: - The Main use of mineral and chemical admixtures in concrete is a solution to achieve full compaction particularly where reinforcement congestion and shortage of skilled workers. The past researchers have been underscored the use of mineral and chemical admixtures imparts the desirable properties to concrete in both fresh and hardened state. This paper has been made an attempt to study the performance of Self-Compacting Concrete containing0%,5%, 10%,15% & 20% fly ash of cement content. The experimental tests for fresh and hardened properties of Self-Compacting Concrete for five mixes of M20 grade are studied and the results are compared with normal vibrated concrete. The tests considered for study are, slump test, compaction factor test, unit weight and compressive strength test The results show that for the constant water cement ratio, increase of superplasticizer dose in Self-Compacting Concrete leads to gain of good self compaction ability in addition to marginal reduction in unit weight. Moreover, there is also slightly increase in compressive strength than that of normal concrete mix.

Keywords: - Compressive strength, Fly ash, Normal concrete, Self-Compacting Concrete, Superplasticizer, Unit weight, Workability.

I. INTRODUCTION

1.1 General:

Self-consolidating concrete (SCC) or Self Compacting concrete, as it's sometimes known, arrived as a revolution in the field of concrete technology. Even if there is still no official definition of SCC, the concept could be defined as follows:

A self-consolidating concrete must:

Have a fluidity that allows self-consolidation without external energy

- Remain homogeneous in a form during and after the placing process, and
- Flow easily through reinforcement.

Self Compacting concrete (SCC) is an innovative concrete that does not require vibration for placing and compaction. It is able to flow under its own weight, completely filling formwork and achieving full compaction, even in the presence of congested reinforcement. The hardened concrete is dense, homogeneous and has the same engineering properties and durability as traditional vibrated concrete.

Self Compacting concrete was developed at that time to improve the durability of concrete structures. Since then, various investigations have been carried out and SCC has been used in practical structures in Japan, mainly by large construction companies. Investigations for establishing a rational mix-design method and self compact ability testing methods have been carried out from the viewpoint of making it a standard concrete. Self Compacting concrete is cast so that no additional inner or outer vibration is necessary for the compaction. It flows like "honey" and has a very smooth surface level after placing. With regard to its composition, Self Compacting concrete consists of the same components as conventionally vibrated concrete, which are cement, aggregates, and water, with the addition of chemical and mineral admixtures in different proportions.

1.2 Historical Development of Self Compacting Concrete:

Self Compacting concrete, in principle, is not new. Special applications such as underwater concreting have always required concrete, which could be placed without the need for compaction. In such circumstances vibration was simply impossible. Early Self Compacting concretes relied on very high contents of cement paste and, once super plasticizers became available, they were added in the concrete mixes. The mixes required specialized and well-controlled placing methods in order to avoid segregation, and the high contents of cement paste made them prone to shrinkage. The overall costs were very high and applications remained very limited.

1.3 Motive for Development of Self Compacting Concrete:

For several years beginning in 1983, the problem of the durability of concrete structures was a major topic of interest in Japan. To make durable concrete structures, sufficient compaction by skilled workers is required. However, the gradual reduction in the number of skilled workers in Japan's

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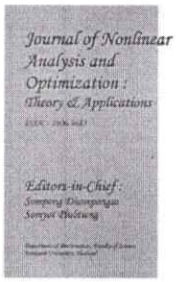

A COMPARATIVE SURVEY ON VIRTUAL MACHINE MIGRATION SYSTEMS FOR CLOUD BASED ENVIRONMENTS

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ABSTRACT:

In large-scale Cloud Data Centers (CDC), virtualization approaches successfully meet the rising demand for computing, storage, and communication resources. Through virtual machine (VM) migration, it is possible to accomplish a variety of resource management goals, including load balancing, online system maintenance, proactive fault tolerance, power management, and resource sharing. The process of migrating virtual machines requires a lot of resources since virtual machines need constant access to CPU cycles, cache memory, memory space, and communication bandwidth. We talk about different performance indicators like the amount of data moved, overall migration time, and application service downtime. VM migration involves the transfer of CPU, memory, and storage data, and we specify the type of data that must be transferred in each situation. We provide a succinct analysis of security risks in live VM migration and group them into three groups (control plane, migration module, and data plane). We also go over the security needs and available defenses against potential assaults. The research problems in enhancing the performance of live VM migration are addressed, and specific gaps are noted.

Keywords: Cloud computing, Virtual machine migration, Virtualization, Pre-copy technique, Post-copy technique, Security

1. Introduction

In cloud computing [1] environment services are delivered in the form of hardware, software, storage, platform, infrastructure, database and much more using Google's App Engine [2], Microsoft Azure [3], Amazon's EC2 [4], IBM SmartCloud [5], etc. Cloud Computing delivers hardware and software capabilities in the form of services over the internet and allows consumers to be provisioned resources on-demand, on a pay-per-use [6] model. Due to the increased demand for cloud resources, cloud providers handle warehouse size data center, this

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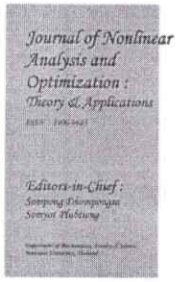

A MACHINE LEARNING BASED APPROACH FOR THE ANALYSIS OF TWEETS

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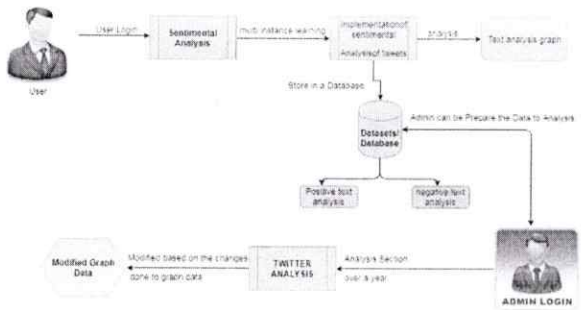
ABSTRACT

Women and girls have been experiencing a lot of violence and harassment in public places in various cities starting from stalking and leading to abuse harassment or abuse assault. This research paper basically focuses on the role of social media in promoting the safety of women in Indian cities with special reference to the role of social media websites and applications including Twitter platform Facebook and Instagram. This paper also focuses on how a sense of responsibility on part of Indian society can be developed the common Indian people so that we should focus on the safety of women surrounding them. Tweets on Twitter which usually contains images and text and also written messages and quotes which focus on the safety of women in Indian cities can be used to read a message amongst the Indian Youth Culture and educate people to take strict action and punish those who harass the women. Twitter and other Twitter handles which include hash tag messages that are widely spread across the whole globe sir as a platform for women to express their views about how they feel while we go out for work or travel in a public transport and what is the state of their mind when they are surrounded by unknown men and whether these women feel safe or not?

I. ARCHITECTURE



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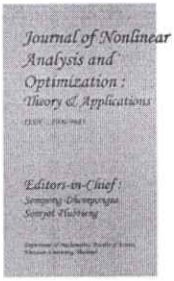

ANALYSIS OF CRYPTOGRAPHY ENCRYPTION FOR NETWORK SECURITY USING AI TECHNIQUES

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Abstract.

This paper considers some recent advances in the field of Cryptography using Artificial Intelligence (AI). It specifically considers the applications of Machine Learning (ML) and Evolutionary Computing (EC) to analyze and encrypt data. A short overview is given on Artificial Neural Networks (ANNs) and the principles of Deep Learning using Deep ANNs. In this context, the paper considers: (i) the implementation of EC and ANNs for generating unique and unclonable ciphers; (ii) ML strategies for detecting the genuine randomness (or otherwise) of finite binary strings for applications in Cryptanalysis. The aim of the paper is to provide an overview on how AI can be applied for encrypting data and undertaking cryptanalysis of such data and other data types in order to assess the cryptographic strength of an encryption algorithm, e.g. to detect patterns of intercepted data streams that are signatures of encrypted data. This includes some of the authors' prior contributions to the field which is referenced throughout. Applications are presented which include the authentication of high-value documents such as bank notes with a smartphone. This involves using the antenna of a smartphone to read (in the near field) a flexible radio frequency tag that couples to an integrated circuit with a non-programmable coprocessor. The coprocessor retains ultra-strong encrypted information generated using EC that can be decrypted on-line, thereby validating the authenticity of the document through the Internet of Things with a smartphone. The application of optical authentication methods using a smartphone and optical ciphers is also briefly explored

1. INTRODUCTION

Computer data also moves from computer to device, leaving their physical environment safe. When the data is out of control, it is for fun or benefit of people with poor intentions that the data can be altered or forged. Cryptography can turn and reformat our data to make its journey between computers more secure. The technology is built on secret codes, which are enhanced by modern mathematics that powerfully protect our data.

• Computer Security - common name for data protection and thwart hacker tools Network security-Data protection steps during transmission Network security

• Internet Security - Data protection measures through interconnected data collection Security Attacks, Services and Mechanisms The Security Manager responsible for the safety needs of an organisation needs a systemic means to identify the security requirements and characterize approaches to meet the requirements to effectively evaluate their safety. Three dimensions of information security are one approach:

• Security attack – Any initiatives that impact the information security of an entity

• Security mechanism – A method for the detection , prevention or recovery of a security attack

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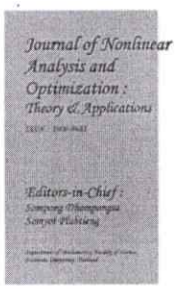

DRIVER SLEEPINESS RECOGNITION FRAMEWORKUTILIZING OPEN CV ALGORITHM

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ABSTRACT— In many countries throughout the world, driver sleepiness is a major cause of traffic accidents. Several driver sleepiness detecting technologies have been presented in recent years to help alleviate this issue. The OpenCV (Open-source Computer Vision) algorithm is used in this work to introduce a unique method for detecting driver sleepiness. To record real-time video frames of the driver's face, the suggested system makes use of a camera installed inside the car. Applying the OpenCV method, face characteristics are analyzed to look for indicators of sleepiness. The method consists of a number of steps, including face detection, facial landmark identification, and eye tracking. The driver's face is found in the video frames that were collected using a cascade classifier in the face detection stage. In the following step, a trained facial landmark recognition model is used to identify face landmarks. The technology analyzes the driver's eye closure patterns, a key sign of fatigue, by following the movement of particular facial markers. Extensive testing was done on a large dataset of drivers who displayed different levels of tiredness in order to assess how well the suggested system performed. The outcomes illustrate the system's efficacy in precisely and reliably identifying driver sleepiness with high recall rates. Through early notifications to sleepy drivers and the prevention of accidents brought on by driver weariness, the driver drowsiness detection system utilizing the OpenCV algorithm described in this research has the potential to improve road safety. The device may be integrated into current cars or added to advanced driver assistance systems (ADAS) to increase general road safety and lower the likelihood of accidents brought on by drowsy driving.

Keywords: Driver drowsiness detection, OpenCV algorithm, Road safety, Facial analysis, Eye tracking, Driver fatigue, Real-time monitoring, Driver assistance systems (ADAS)

I. INTRODUCTION

Road safety is seriously threatened by the serious problem of drowsy driving. A significant portion of collisions globally result from fatigue-related causes, which cause injuries, deaths, and monetary losses. Through prompt warnings or interventions for the driver, real-time sleepiness detection of drivers can help prevent such incidents. Driver drowsiness detection systems have become popular as practical solutions to reduce this issue as a result of developments in computer vision and machine learning techniques. In this study, the OpenCV (Open Source Computer Vision) algorithm is used to provide a unique method for detecting driver fatigue. It is possible to analyze visual input in real-time applications using OpenCV, a popular open-source library that offers a wide range of computer vision functions and algorithms.
The suggested solution makes use of a mounted camera inside the car to record continuous video frames of the driver's face. The technology is able to recognize indicators of intoxication and warn the driver by keeping a watch on the driver's facial expressions and eye movements. In order to analyze and decipher the visual data that the camera has recorded, the OpenCV algorithm is essential.

A cascade classifier is used by the system to recognize the driver's face in the video frames as the first step in the detection process, which is called face detection. The algorithm then moves on to the next stage, which entails facial landmark detection, after identifying the face. To find important facial landmarks like the eyes, brows, and lips, a pre-trained facial landmark recognition model is used. Further analysis can use these landmarks as reference points.

The system pays special attention to eye tracking as a key sign of fatigue. The device may detect instances of extended

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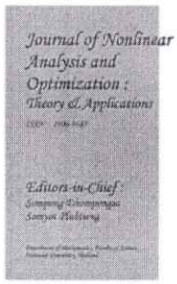

ENHANCING MISSING PERSONS INVESTIGATIONS

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ABSTRACT

Every day, huge numbers of people around the world go missing. These missing people include children, teenagers, mentally challenged individuals, elderly individuals with Alzheimer's disease, etc.. Most of them remain untraced. This study offers a method that would help the police and the public by speeding the process of searching using face recognition. Face recognition technology may be utilized for various reasons and finding the missing individual is a biggest advantage for any face recognition approach. To make the work of discovering the missing person easier we are intending to build an application which will be accessed by certain volunteers via which we can find missing person in short span of time. The police will have an easier time finding a specific person as a result of this. However, in order to locate a certain person, it is necessary to automate the process by identifying a specific image and comparing it to other images. to check whether both photos having same qualities or not. By doing this we will come to know whether the missing person in the image clicked from certain location is correct or not, and if it is correct then police can start their following steps to find the individual from that region.

Keywords- *Missing people, facial points, kidnap, lost kid, trace, face recognition.*

I. INTRODUCTION

Every day, enormous numbers of people around the world go missing, including children, teenagers, mentally challenged individuals, elderly individuals with Alzheimer's disease, etc. Most of them remain untraced. This study offers a method that would help the police and the public by speeding the process of searching using face recognition. Face recognition technology may be utilized for various reasons and finding the missing individual is a biggest advantage for any face recognition approach. To make the work of finding the missing person easier we are intending to. missing person is a biggest benefit for any facial recognition technique. To make the work of discovering the missing person easier we are intending to build an application which will be accessed by certain volunteers via which we may find missing person in short span of time. This will make the work of police to discover a particular person simpler. However, in order to locate the person, it is necessary to automate the process by identifying a certain image and comparing it to other images.check whether both images have same characteristics or not. By doing this, we will be able to determine whether the missing person depicted in a picture taken from a certain region is accurate or not, and if it is, authorities can begin their following measures to locate the person from that area.Every single day, many people go missing for a variety of causes, including old age, mental illness, emotional disorders, Alzheimer's disease, etc. The process to find the missing individual faints because most of them go unfound. We propose a solution for the same. The database of the application maintains a record of each freshly filed case. Every time they come across someone like this, they take a picture of them and search them up in the database. In the event that no matches are found, they can upload the data to the database (optional: if known),

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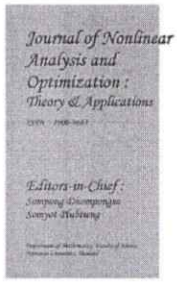

FINDING OF VITAMIN DEFICIENCY AND FOOD RECOMMENDATION SYSTEM USING MULTIPLE CLASSIFIER ALGORITHMS

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ABSTRACT

The World Health Organization (WHO) has shown that a lack of or uneven intake of food contributes to roughly 9% of heart attack fatalities, 11% of ischemic heart disease deaths, and 14% of gastrointestinal cancer deaths globally. More than a billion individuals are anemic due to iron deficiency (anaemia), 0.25 billion children have vitamin deficiencies ranging from vitamin A to vitamin K inadequacy, and 0.7 billion are iodine deficient, making a total of roughly 0.25 billion people anaemic. Diet recommendations are the primary goal of this study. The recommender system has to cope with a significant amount of data from the dataset in order to find relevant recommendations.

In this project own data set is prepared based on various high and low values of vitamins from (vitamin a , b,c,d,e,k) and features are divided from normal and abnormal conditions of vitamins and labels are divided in to o and 1 as normal and abnormal. Another dataset is prepared based on combination of various vitamins and their deficiency and food to be recommended based on which vitamin is deficient.

In this project multiple classifier algorithms are used (knn, decision tree, random forest, logistic regression, voting classifier) ensembled algorithm is used to combine multiple algorithms and train a new algorithm. Accuracy of each algorithm is calculated and best algorithm is used for prediction purpose.

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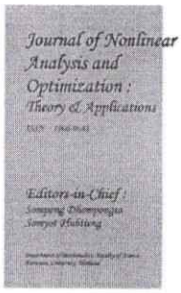

IMAGE PROCESSING AND MACHINE LEARNING FOR HUMAN STRESS DETECTION

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Abstract— The major goal of this study is to use vivid Machine Learning and Image Processing methods to identi-fy stress in the human body. Our system is an upgraded version of previous stress detection systems that did not include live detection or personal counselling, but this system includes live detection and periodic analysis of employees, as well as detecting physical and mental stress levels in them and providing proper stress management remedies via a survey form. Our method is primarily focused on stress management and cre-ating a healthy and spontaneous work environment for workers in order to get the most out of them during working Hours.

Keywords— Facial Expressions, K-Nearest Neighbor Classifier, Stress, Stress prediction

1. INTRODUCTION

Stress management systems are necessary for detecting stress levels that affect our socio-economic situation. According to the World Health Organization, stress is a mental health disorder that affects one out of every four people (WHO). Mental and financial troubles, as well as a lack of clarity at work, bad working relationships, despair, and, in extreme situations, death, are all symptoms of human stress. This necessitates the provision of therapy to help stressed people manage their stress. While it is impossible to totally eliminate stress, taking preventative measures may help you cope. Only medical and physiological peoples can now determine whether or not someone is depressor (stressed). A questionnaire is one of the most used methods for detect-ing stress. This technique relies primari-ly on individual responses; people will be hesitant to communicate whether or not they are worried. Automatically de-tecting stress lowers the likelihood of health problems and improves society's well-being. This involves the creation of a scientific approach for assessing stress levels in people using physiological markers. Since stress is such a signifi-cant societal contribution, a variety of approaches for detecting it have been investigated. It enhances people's quality of life, according to Ghaderi Tal. Stress was assessed using data from respira-tion, heart rate (HR), face electromyog-raphy (EMG), Galvanic skin response (GSR) foot, and GSR hand, with the finding that parameters related to the respiratory process are critical in stress detection. Maria Viqueira et al. present a method for anticipating mental stress that relies only on GSR as a physiologi-cal sensor and uses a standalone stress detecting device. Electrocardiograms alone were utilized by David Liu and colleagues to predict stress levels (ECG). The effectiveness of multimodal sensors in detecting stress in working individuals is investigated experimental-ly. Sensor data from pressure distribu-tion, heart rate, blood volume pulse (BVP), and electro dermal activity is used in this investigation (EDA). In ad-dition, an eye tracker

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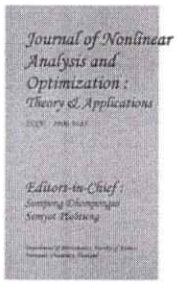

IMPLEMENTATION OF BLOCK CHAIN IN FINANCIAL SECTOR TO IMPROVE SCALABILITY

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ABSTRACT— The Blockchain is an encrypted database that stores information statistics, or in different words, it is a virtual ledger of any transactions, contracts - that needs to be independently recorded. One of the key capabilities of Blockchain is that this virtual ledger is out there throughout several masses and heaps of computer and isn't always sure to be stored in a single place. Blockchain chain has already commenced disrupting the financial offerings area, and it's far this technology which underpins the virtual currency- bitcoin transaction. The aim of the paper is to conduct research on the effect of blockchain technology on the financial sector. There is no doubt that the world is curious to see how this promising technology will influence or shape the future of banking. Blockchain enhances safety in data storage and transmutation, avails a decentralized and transparent network infrastructure and significantly reduces the costs in operations. These remarkable attributes make blockchain a very promising and in-demand solution even in an industry as restricted as the banking sector.

Keywords—Applications of blockchain, benefits from blockchain, features of blockchain, security of blockchain.

I.INTRODUCTION

A blockchain is a distributed digital ledger where transactions can be recorded and checked electronically over a network of computers in the absence of a central ledger. Cryptography is used to protect the data from deception or hackers[1]. Blockchain is being called "the new internet", and is expected to transform businesses across various sectors, most importantly the financial sector.

It was invented by "Satoshi Nakamoto" in 2008. A blockchain helps to record all the transactions made so that no alterations can be made later on so as to maintain the security of the data. Today, entities maintain records in their own traditional ledgers for transactions between them. This sometimes leads to transfer or exchange of a considerable amount of data between entities, resulting in an increase in time and cost for them. It also makes the process of any asset transfers inefficient, costly and vulnerable. The duplicated shared ledger concept in blockchain technology can help remove these weaknesses[2]. The use of smart contracts, an application of blockchain technology, can enhance efficiency through event-triggered mechanisms. Most credit and budgetary organizations can't do their work without various go-between, while their interest makes the administrations of these establishments substantially more costly. The execution of blockchain will empower pointless arbiters to be relinquished and give clients and banks less expensive administrations. The fundamental zones in which banks and other budgetary organizations will

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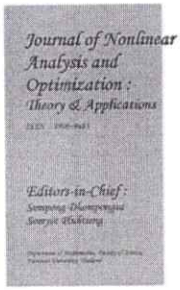

IMPROVING THE SECURITY AND EFFICIENCY OF CLOUD SERVICES THROUGH THE USE OF BIOMETRIC IDENTIFICATION

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ABSTRACT_ Thus, there is an ever-increasing demand for secure remote access to remote data storage services in our data-driven culture." Here, we propose a new biometric authentication system for securing access to a distant server (in the cloud). We use biometric data as a secret credential in the suggested method. The user's biometric data is then utilised to construct the user's private key, which is unique to the individual. Using two biometric templates, we present an efficient method to generate a session key for secure message transmission between two participants. It's not necessary to store or share the user's private key in any way. Instead, the session key is produced automatically. In-depth testing and a side-by-by-side comparison show that the recommended strategy is effective and worthwhile.

1.INTRODUCTION

For example, according to the National Institute of Standards and Technologies (NIST), "Cloud Computing" is a model for making it possible to quickly provision, scale up or down, and release shared pools of configurable computing resources (networks and servers; storage; applications and services); this can be done with minimal management effort or provider interaction. Cloud has five primary traits that made it stand out from the rest. [1][3]: The ability to access cloud resources without the need for human intervention. Cloud resources can be accessed from a wide range of devices, including PCs, laptops, and mobile devices, across a wide range of networks. Virtual resources can be located in any location and assigned as needed, allowing for geographical independence. Rapid elasticity is a feature that

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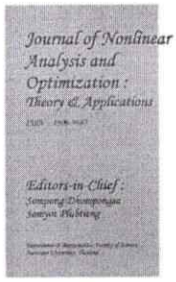

SECURE DATA GROUP SHARING AND CONDITIONAL DISSEMINATION WITH MULTI-OWNER IN CLOUD COMPUTING

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ABSTRACT

With the rapid development of cloud services, huge volume of data is shared via cloud computing. Although cryptographic techniques have been utilized to provide data confidentiality in cloud computing, current mechanisms cannot enforce privacy concerns over cipher text associated with multiple owners, which makes co-owners unable to appropriately control whether data disseminators can actually disseminate their data. In this paper, we propose a secure data group sharing and conditional dissemination scheme with multi-owner in cloud computing, in which data owner can share private data with a group of users via the cloud in a secure way, and data disseminator can disseminate the data to a new group of users if the attributes satisfy the access policies in the cipher text. We further present a multiparty access control mechanism over the disseminated cipher text, in which the data co-owners can append new access policies to the cipher text due to their privacy preferences. Moreover, three policy aggregation strategies, including full permit, owner priority and majority permit, are provided to solve the privacy conflicts problem caused by different access policies. The security analysis and experimental results show our scheme is practical and efficient for secure data sharing with multi-owner in cloud computing.

1.1INTRODUCTION

The popularity of cloud computing is obtained from the benefits of rich storage resources and instant access [1]. It aggregates the resources of computing infrastructure, and then provides on-demand services over the Internet. Many famous companies are now providing public cloud services, such as Amazon, Google, Alibaba.

These services allow individual users and enterprise users to upload data (e.g. photos, videos and documents) to cloud service provider (CSP), for the purpose of accessing the data at any time anywhere and sharing the data with others. In order to protect the privacy of users, most cloud services achieve access control by maintaining access control list (ACL). In this way, users can choose to either publish their data to anyone or grant access rights merely to their approved people. However, the security risks have raised concerns in people, due to the data is stored in plaintext form by the CSP.

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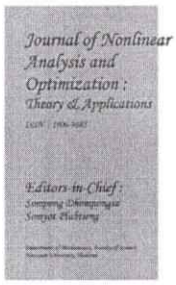

SECURING HOSPITAL DATA WITH BLOCK CHAIN AND AI

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ABSTRACT
It presents a model of multi-client structure for access-control to datasets set away in an unfrosted cloud circumstance. Dispersed amassing like some spare un-trusted circumstance needs the facility to check share-data. Our way of thinking gives a section request over the dataset away in the-cloud without the trader interest. The basic device of access control fragment is ciphertext-blueprint AES plot with dynamic-properties. consume a blockchain based decentralized-record, our structure gives steady record of all critical security-occasions, key age, acquire the chance to approach errand, change, find the prospect to ask for. We advise a lot of crypto-graphic shows guaranteeing affirmation of crypto graphic activities-requiring riddle.
Keywords—cloud storage; attribute-based access control; ciphertext-policy attribute-based encryption; advance encryption standard; blockchain.

I. INTRODUCTION

Prior to couple of years, organization to remotely store and coordinate customer data on cloud-based organizations have extended. A lot of-customers store their records in fogs. overall, there are a couple of security issues and copyright perspective. The basic issue is moving data to the outside condition, with the true objective that some other entity aside from the owner can pick up induction to information. Of course, it is difficult to give up to the different workplaces that offer organizations to data storing: fortification records.

This thesis presents a model of multi-customer structure for access-control to datasets present in an entrusted cloud condition. Conveyed stockpiling like some added untrusted circumstance needs the facility to confirm share information. Our strategy gives a route in control over the data present in the cloud without the provider participation. The typical mechanical assembly of access-control instrument is ciphertext-approach ABE conspire with dynamic

characteristics. Using a blockchainbased decentralized evidence, our structure gives constant log of all critical security events, for instance, get to system assignment, change or denial.As of now, there are not all that numerous instruments and strategies to secure information put away on cloud servers and in the meantime giving apparatuses to an agreeable administration. A few utilities propose to encode singular documents before sending to the cloud, for example "BoxCrypt" [1]. There are additionally different apparatuses for creating secure web applications with access to databases, such as «CryptDB» [2], «ARX» [3]. They utilize diverse encryption plans, distinctive way to deal with their utilization.

There are intends to guarantee the uprightness and non-disavowal, their task dependent on blockchain

use. Specifically, "BigchainDB" [4] is intended for dispersed distributed storage of data with an ensured affirmation of its honesty and non-disavowal. The remainder of the paper is composed as pursues. In segment 2 we portray the idea of the venture framework and the fundamental points of interest of the picked methodology. Further, in segment 3 the chosen plan of characteristic based encryption and adjusting it. Segment 4 portrays the stage survey of the arrangements and collaboration conventions for the Ethereum virtual machine. Area 5 finishes up the investigation and distinguishes a couple of bearings of further research.

II. TECHNIQUE OR ALGORITHM AES Algorithm:

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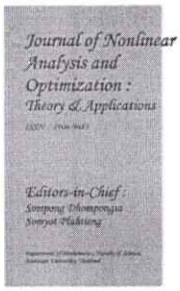

SMART HOME INTERIOR DESIGN FOR ACCOMPLISHED FEATURES USING IMAGE PROCESSING

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ABSTRACT:

It's difficult to decorate your home with the right things. Our goal is to create an Android app that will take a picture of the user's bedroom and allow them to visualise it with various interior design elements, such as wall paint, carpeting, and curtains. Applications that imitate a furniture arrangement frequently take advantage of augmented reality. We'll talk about an augmented reality system for home displays that leverages fast corner detection and provides real-time tracking without identification markerse.Though generally limited to a 2D tablet or phone interface, such systems frequently demand users to physically and regularly alter their viewpoint of the real world, which necessitates human manipulation of the same. We have created a system that automatically determines the best view point to enhance comprehension of the room layout overall and makes it simple for the user to change the view point in order to help solve this issue.

Key words: Agumented reality,interior design.

INTRODUCTION:

Incorporating computer-generated sensory input including music, video, graphics, or GPS data, augmented reality (AR) is a live, direct or indirect depiction of a physical, real-world environment whose elements are improved (or supplemented). It is associated with the more general idea of reality when a computer alters (perhaps even lessens rather than augments) the perception of reality. Technology thus enhances the way that people now perceive reality. The elements of the digital world are revealed in our perception of the real world thanks to augmented reality. As an end-user application (for a customer looking to buy furniture), this effort on the use of augmented reality for home furnishings could be quite beneficial. It provides furniture models in 3-D animation as well as instructions that are connected to the job domain. A popular field of research in recent years, augmented reality (AR) exploits innovation to bring together the physical and digital realms. AR incorporates digital objects into the real scene while offering users the feeling of realistic immersion because it is based on computer graphics and related techniques for image processing. AR focuses more emphasis on transferring the real scene to the virtual world that Virtual Reality (VR) would. The user experiences the digital image as if it resembled an authentic scenario given that it selects a real-world scene and adds an imaginary thing to it. In AR technology, marker systems and markerless systems are the two methods for connecting virtual and physical objects.

DESIGN:

This picture depicts all of the entities that are currently incorporated into the system in a succinct and understandable manner. The figure depicts how the various actions and options are linked together. the entire process and how it was carried out may be described as a picture. The diagram below depicts the functional relationships between distinct things.

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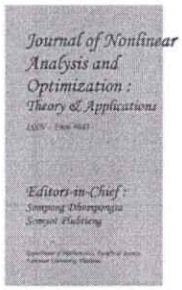

WEAPON DETECTION AND ALERTING SYSTEM

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ABSTRACT: ***When you talk about an area, a place or a country,first priority goes to the safety and security.Should maintain public safety and security in various environments, including airports, public venues etc.Traditional manual inspection methodsare timeconsuming,inefficient, and often prone to human error. With the advancements in computer vision and machine learning, automated weapon detection systems have emerged as a promising solution to enhance security measures.This abstract focuses on the development and implementation of weapon detection systems using computer vision techniques and deep learning algorithms. The goal is to create an intelligent system that can accurately and efficiently identify weapons in real-time from video or image streams. The system aims to detect a wide range of weapons, including firearms, knives, explosives, and other dangerous objects.The proposed weapon detection system consists of several key components, including image/video acquisition,preprocessing, feature extraction, and classification. Initially, the system acquires video or image data from surveillance cameras or other sources. Preprocessing techniques are applied to enhance the quality of the data and reduce noise or interference. Feature extraction methods, such as Convolutional Neural Networks (CNNs), are then employed to extract relevant features from the input data. These features capture the distinctive characteristics of weapons, enabling accurate classification.To train the weapon detection system, a large labelled dataset of weapon images and non-weapon images is required. Deep learning techniques, such as supervised learning or transfer learning, can be employed to train the model using this dataset. The trained model is then deployed in real-time scenarios, where it processes incoming video or image streams and classifies whether a weapon is present or not.***

Keywords: Gun detection, deep learning, object detection, artificial intelligence, computer vision, convolutional neural network.

I. INTRODUCTION

Weapon detection plays a vital role in maintaining security and public safety in various settings, ranging from airports and public venues to high-security facilities. The ability to identify and detect weapons, such as firearms, knives, explosives, and other dangerous objects, is essential in preventing potential acts of violence and mitigating risks associated with armed individuals.Traditionally, weapon detection has relied on manual inspection methods, which are timeconsuming, resource-intensive, and prone to human error. However, with the rapid advancement of computer vision and machine learning technologies, automated weapon detection systems have emerged as a promising solution to enhance security measures.

Automated weapon detection systems leverage computer vision techniques and deep learning algorithms to analyse visual data, such as video streams or images, and identify the presence of weapons in real-time. These systems offer several advantages over manual inspection, including higher efficiency, increased accuracy, and the ability to process large volumes of data quickly.The development of an effective weapon detection system involves several key components. It begins with the acquisition of video or image data from surveillance cameras or other sources. Preprocessing techniques are then applied to enhance the quality of the data and remove noise or interference.

Next, the system employs feature extraction methods, such as Convolutional Neural Networks (CNNs), to capture relevant features from the input data. These features encode the distinctive characteristics of weapons, allowing for accurate classification and detection.Training the weapon detection system requires a large labelled dataset of weapon images and non-weapon images. Deep learning techniques, including supervised learning or transfer learning, are employed to train the model using this dataset. The trained model is then deployed in real-time scenarios, where it analyses incoming video or image streams and identifies the presence of weapons.

Evaluation of the weapon detection system involves assessing its accuracy, precision, recall, and processing speed. Various performance metrics, such as accuracy rate, false positive rate, and detection time, are measured to determine the system's effectiveness.

Additionally, the system's robustness to environmental conditions, lighting variations, and occlusions is also evaluated.The implementation of weapon detection systems brings numerous benefits. It enhances public safety by preventing potential acts of violence, deters individuals from carrying weapons illegally, enables rapid response in case

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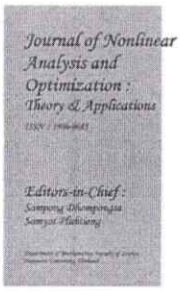

A BLOCK CHAIN-BASED SECURITY SHARING FRAMEWORK WITH FINE-GRAINED ACCESS CONTROL FOR PERSONAL DATA

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ABSTRACT:
Privacy protection and open sharing are important data organizations in the artificial intelligence (AI) stage. "The current solution is divided into a data management distribution platform and users upload their own data to the cloud server for storage and distribution. However, when users upload files to the server, they lose their personal data, and security and privacy become an important issue". Data encryption and orchestration has almost solved this problem and has acquired new capabilities to protect private data on cloud servers. However, it still relies on the trust of third parties such as cloud service providers (CSPs).
"In this paper, we propose a blockchain-based personal information and security system referring to the BSSPD concept, which combines blockchain, ciphertext expert attribute-based encryption (CP-ABE) and Interplanetary File System (IPFS) to solve this problem. In this answer, the data enforcers encrypt the combined data and store it in IPFS, which by definition has many branches. The address and decryption key of the shared data will be encrypted using CP-ABE according to the instructions of the supervisor, and the data owner uses the blockchain to publish the data file and issue the key for the operator's data file. Personal data workers who control access rights can download and identify data. Data owners have full control over access to their data and BSSPD supports deletion of certain user data without affecting others."
To protect the confidentiality of operator data, keywords in ciphertext are used when storing data. We have confirmed the credibility of BBSPD and simulated our theory on the EOS blockchain, proving that our knowledge is necessary. At the same time, we use computational analysis of storage and computational loads to determine the efficiency of BSSPD.

INTRODUCTION

"The development of 5G and IoT technology offers many opportunities for rapid use of artificial intelligence (AI). At the same time, data security and privacy protection have become paramount considerations in data sharing and sharing. Powerful data mining and analysis poses a threat to self-defense. Traditionally, most people choose to outsource to cloud servers to share and publish information. However, much of the data stored in the cloud is sensitive, especially those generated by IoT devices that interact with people's lives. These documents have their own characteristics and may contain personal information such as life, work, health; It will cause serious personal problems when personal information is stolen or illegally associated with the identity of the owner. Therefore, integrating data and creating value while ensuring data security and privacy has become a major challenge for all businesses today.

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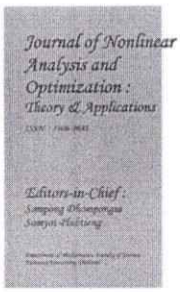

A MODIFIED HIERARCHICAL ATTRIBUTE-BASED ENCRYPTION ACCESS CONTROLMETHOD FOR MOBILE CLOUD COMPUTING

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ABSTRACT
Cloud computing is an Internet-based computing pattern through which shared resources are provided to devices on demand. It is an emerging but promising paradigm to integrating mobile devices into cloud computing, and the integration performs in the cloud based hierarchical multi-user data-shared environment. With integrating into cloud computing, security issues such as data confidentiality and user authority may arise in the mobile cloud computing system, and it is concerned as the main constraints to the developments of mobile cloud computing. In order to provide safe and secure operation, a hierarchical access control method using modified hierarchical attribute-based encryption (M-HABE) and a modified three-layer structure is proposed.
Keywords: Integration, Computing, Internet

INTRODUCTION

With explosive growth of mobile devices including smart phones, PDAs, and tablet computers and the applications installed in them, the mobile-Internet will maintain the development growth trend as 4G communication network is extensively promoted to our lives. What users of the mobile devices and applications need is that mobile-Internet can provide them with the service which is user-friendly, highspeed, and steady. In addition, the security issues of mobile terminals and the Internet access are attached importance to. The flaws of data storing and data computing in mobile-Internet applications can be overcome by mobile cloud computing while the new paradigm can also accomplish cloud based multi-user data sharing, end geographical service limitation, and process real-time tasks efficiently at the same time. There is no accurate definition of mobile cloud computing, several concepts were proposed, and two most popular schemes can be described as follows:

1) Mobile cloud computing is a kind of scheme which could run an application such as a weather monitor application on remote, while the mobile devices just act like normal PCs except that the mobile devices connect to cloud servers via 3G or 4G while PCs through Internet. And this concept is considered as the most popular definition of mobile cloud computing [4].

2) Taking advantages of leisure resources such as CPU, memory, and storing disks, another model of mobile cloud computing exploits the mobile devices themselves as resources providers of cloud [5]. And the scheme supports user mobility, and recognizes the potential of mobile clouds to do collective sensing as well. In this paper, we mainly use the first paradigm mentioned above, but the second one inspires us to assume that what if the mobile devices do not provide computing resources or storing resources but sensing data instead? In fact, most mobile devices are capable to capture some data from the environment nowadays, for example, almost every smart phone are equipped with sensors of proximity, accelerometer, gyroscope, compass, barometer, camera, GPS, microphone [6], etc. Combining the concept of WSN, mobile devices can be regarded as mobile sensors that are able to provide other mobile devices who are users of the mobile cloud services with some sensing information including environment monitoring data, health monitoring data, and so on. In order to meet what the application requires, security issues of the whole system should not be ignored, among all security issues the most important two security issues in such model can be divided into two parts: authority of application users and the confidentiality of sensing data. Those issues can be solved by providing methods of access control [7]. Attribute Based Encryption (ABE) is a recent cryptographic primitive which has been used for access control [8]–[11]. Access control issue deals with providing access to authorized users and preventing unauthorized users to access data. In this paper, a hierarchical access control method using a modified hierarchical attribute-based encryption (M-HABE) and a modified three-layer structure [16] is proposed.

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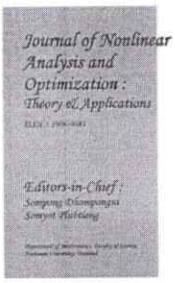

AN ANALYSIS OF BRAIN STROKE PREDICTION USING MACHINE LEARNING

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ABSTRACT:

A stroke, also known as a cerebrovascular accident or CVA is when part of the brain loses its blood supply and the part of the body that the blood-deprived brain cells control stops working. This loss of blood supply can be ischemic because of lack of blood flow, or haemorrhagic because of bleeding into brain tissue. A stroke is a medical emergency because strokes can lead to death or permanent disability. There are opportunities to treat ischemic strokes but that treatment needs to be started in the first few hours after the signs of a stroke begin. The patient, family, or bystanders should activate emergency medical services immediately should a stroke be suspected. A transient ischemic attack (TIA or mini-stroke) describes an ischemic stroke that is short-lived where the symptoms resolve spontaneously. This situation also requires emergency assessment to try to minimize the risk of a future stroke. By definition, a stroke would be classified as a TIA if all symptoms resolved within 24 hours. According to the World Health Organization (WHO) stroke is the 2nd leading cause of death globally, responsible to approximately 11% of total deaths . For survival prediction, our ML model uses dataset to predict whether a patient is likely to get stroke based on the input parameters like gender, age, various diseases, and smoking status. Unlike most of the datasets, our dataset focuses on attributes that would have a major risk factors of a Brain Stroke.

I.INTRODUCTION

Machine Learning (ML) delivers an accurate and quick prediction outcome and it has become a powerful tool in health settings, offering personalized clinical care for stroke patients. An application of ML and Deep Learning in health care is growing however, some research areas do not catch enough attention for scientific investigation though there is real need of research. Therefore, the aim of this work is to use ML algorithms like Logistic regression, SVM, KNN, Decision Tress and Random Forest to determine and predict the risk of Brain Strokes. A total of 39 studies were identified from the results of ScienceDirect web scientific database on ML for

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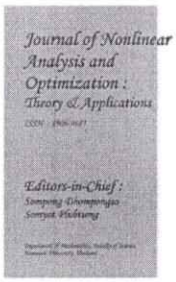

ANOMOLY DETECTION AND ATTACK CLASSIFICATION FOR TRAIN REAL- TIME ETHERNET

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ABSTRACT:
Real-time Ethernet has been applied to train control and management system (TCMS) of 250km/h Fuxing Electric Multiple Units (EMUs) and some urban rail vehicles. The openness of the Ethernet communication protocol poses a risk of intrusion attacks on the train communication network. It is, therefore, necessary that a safety protection technology is introduced to the train communication network based on real-time Ethernet. In this paper, a train communication network intrusion detection system based on anomaly detection and attack classification is proposed. Firstly, the paper built an anomaly detection model based on support vector machines (SVM). The particle swarm optimization-support vector machines (PSO-SVM), and genetic algorithm-support vector machines (GA-SVM) optimization algorithms are used to optimize the kernel function parameters of SVM. Secondly, the paper built two attack classification models based on random forest. They are iterative dichotomiser3 (ID3) and classification and regression tree (CART). And then, the built intrusion detection and attack classification model is tested by using the public data set knowledge discovery and data mining-99(KDD-99) and the data set of the simulation train real-time Ethernet test bench. PSO-SVM improves the intrusion detection accuracy from 90.3% to 95.75%, GA-SVM improves the detection accuracy from 90.3% to 95.85%. The training time of the PSO-SVM algorithm was higher than that of the GA-SVM algorithm, and much higher than that of the SVM, without optimization. Both ID3 and CART models are verified valid in the attack classification, while the ID3 algorithm obtained 100% accuracy on the training set, and only 32.89% accuracy on the test set, ID3 has a poor classification accuracy of the data outside of the training set. Also, the classification time is very long for ID3 compared with CART. So the comprehensive experimental results show that the intrusion detection system of train real-time Ethernet can use the GA-SVM model for detection of abnormal data. After passing the normal data, the CART model can be used to distinguish between the types of attacks to better complete subsequent responses and operations. Compared with the anomaly detection model based on SVM, the proposed model improves intrusion detection accuracy. And the proposed attack classification algorithm based on CART can improve the computing speed while ensuring the precision of classification.

I. INTRODUCTION:

With the advent of intelligent train control and management system, more and more sensors and equipment are connected to TCMS, the data transmission in TCMS is increasing rapidly, so real-time Ethernet with a high transmission rate is introduced into TCMS. The openness of the train real-time Ethernet protocol makes TCMS vulnerable to adversaryattacks. These attack methods such as port scanning, DoS attacks, and IP address spoofing may also be used in TCMS. Therefore, the introduction of Ethernet brings a threat to TCMS. Cyber-physical systems (CPSs) security has become a critical research topic to avoid key security threats faced by these applications [1]. TCMS is one kind of CPSs which are an integral system featuring strong interactions between its cyber and physical components. TCMS security requires a different strategy from traditional information technology(IT) security. TCMS security plays a crucial part in ensuring the normal operation of the train. Once

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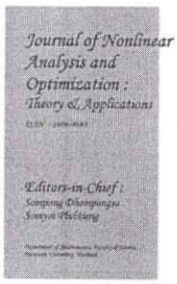

CROSS SITE REQUEST FORGERY DETECTION USING MACHINE LEARNING

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ABSTRACT:
In this project, we propose a methodology to leverage Machine Learning (ML) for the detection of web application vulnerabilities. Web applications are particularly challenging to analyses, due to their diversity and the widespread adoption of custom programming practices. ML is thus very helpful for web application security: it can take advantage of manually labeled data to bring the human understanding of the web application semantics into automated analysis tools. We use our methodology in the design of Mitch, the first ML solution for the black-box detection of Cross-Site Request Forgery (CSRF) vulnerabilities. Mitch allowed us to identify 35 new CSRFs on 20 major websites and 3 new CSRFs on production software.

I. INTRODUCTION

Web applications are the most common interface to security sensitive data and functionality available nowadays. They are routinely used to file tax incomes, access the results of medical screenings, perform financial transactions, and share opinions with our circle of friends, just to mention a few popular use cases. On the downside, this means that web applications are appealing targets to malicious users (attackers) who are determined to force economic losses, unduly access confidential data or create embarrassment to their victims. Securing web applications is well known to be hard.

There are several reasons for this, ranging from the heterogeneity and complexity of the web platform to the adoption of undisciplined scripting languages offering dubious security guarantees and not amenable for static analysis. In such a setting, black-box vulnerability detection methods are particularly popular. As opposed to white-box techniques which require access to the web application source code, black-box methods operate at the level of HTTP traffic, i.e., HTTP requests and responses. Though this limited perspective might miss important insights, it has the key advantage of offering a language-agnostic vulnerability detection approach, which abstracts from the complexity of scripting languages and offers a uniform interface to the widest possible range of web applications. This sounds appealing, yet previous work showed that such an analysis is far from trivial. One of the main challenges there is how to expose to automated tools a critical ingredient of effective vulnerability detection, i.e., an understanding of the web application semantics. Example: Cross-Site Request Forgery (CSRF) Cross-Site Request Forgery (CSRF) is a well-known web attack that forces a user into submitting unwanted, attacker controlled HTTP requests towards a vulnerable web application in which she is currently authenticated. The key concept of CSRF is that the malicious requests are routed to the web application through the user's browser, hence they might be indistinguishable from intended benign requests which were actually authorized by the user.

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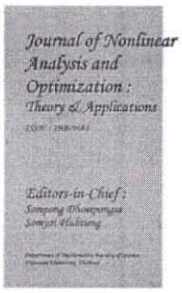

DEEP NEURAL NETWORKS USING EVENT PROFILES BASED ON CYBER THREAT DETECTION

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ABSTRACT
One of the major challenges in cybersecurity is the provision of an automated and effective cyber-threats detection technique. In this paper, we present an AI technique for cyber-threats detection, based on artificial neural networks. The proposed technique converts multitude of collected security events to individual event profiles and use a deep learning-based detection method for enhanced cyberthreat detection. For this work, we developed an AI-SIEM system based on a combination of event profiling for data preprocessing and different artificial neural network methods, including FCNN, CNN, and LSTM. The system focuses on discriminating between true positive and false positive alerts, thus helping security analysts to rapidly respond to cyber threats. All experiments in this study are performed by authors using two benchmark datasets (NSLKDD and CICIDS2017) and two datasets collected in the real world. To evaluate the performance comparison with existing methods, we conducted experiments using the five conventional machine-learning methods (SVM, k-NN, RF, NB, and DT). Consequently, the experimental results of this study ensure that our proposed methods are capable of being employed as learning-based models for network intrusion-detection, and show that although it is employed in the real world, the performance outperforms the conventional machine-learning methods.

INTRODUCTION
With the emergence of artificial intelligence (AI) techniques, learning-based approaches for detecting cyberattacks, have become further improved, and they have achieved significant results in many studies. However, owing to constantly evolving cyberattacks, it is still highly challenging to protect IT systems against threats and malicious behaviors in networks. Because of various network intrusions and malicious activities, effective defenses and security considerations were given high priority for finding reliable solutions [1], [2], [3], [4]. Traditionally, there are two primary systems for detecting cyber-threats and network intrusions. An intrusion prevention system (IPS) is installed in the enterprise network, and can examine the network protocols and flows with signature-based methods primarily. It generates appropriate intrusion alerts, called the security events, and reports the generating alerts to another system, such as SIEM. The security information and event management (SIEM) has been focusing on collecting and managing the alerts of IPSs. The SIEM is the most common and dependable solution among various security operations solutions to analyze the collected security events and logs [5]. Moreover, security analysts make an effort to investigate suspicious alerts by policies and threshold, and to discover malicious behavior by analyzing correlations among events, using knowledge related to attacks. A learning-based method geared toward determining whether an attack occurred in a large amount of data can be useful to analysts who need to instantly analyze numerous events. According to [10],

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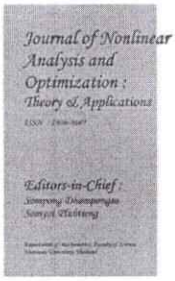

PREDICTION AND CLASSIFICATION OF LIVER DISEASE USING MACHINE LEARNING

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ABSTRACT:
Due to the quick rise in liver illness caused by excessive alcohol use, contaminated gas inhalation, drug use, tainted food, and pickled food packaging, a doctor can make an automatic forecast with the aid of a medical expert system. Early liver disease prediction is now attainable because to the consistent advancements in machine learning technology, allowing for simple early identification of the fatal condition. This will make healthcare more beneficial, and a medical expert system can be employed in a remote location. The liver is vital to life and promotes the body's ability to rid itself of poisons. Early detection of the condition is therefore crucial for recovery. many machine learning techniques, including supervised, unsupervised, and semi-supervising, bolstering SVM, KNN, K-Mean clustering, neural networks, decision trees, and other learning techniques for diagnosing liver disease provide varying accuracy, precision, and sensitivity. The goal of this paper is to provide an overview and comparative analysis of all machine learning techniques currently being used in the medical field for the diagnosis and prediction of liver disease. The analysis is based on accuracy, sensitivity, precision, and specificity.

Keywords- SVM, KNN, K-Mean clustering, Neural networks, Decision trees,accuracy, sensitivity, precision, and specificity.

I. INTRODUCTION

The prevalence of liver illness has rapidly increased in recent years, placing a heavy load on healthcare systems around the world. The negative consequences of excessive alcohol consumption, environmental damage, drug abuse, and tainted food have all exacerbated this serious health problem. Therefore, to address the alarming rise in liver disease cases, the creation of an efficient and automated medical expert system capable of early prediction becomes crucial.

Machine learning, a rapidly developing area of artificial intelligence, has made impressive strides and has enormous promise for revolutionising the healthcare industry. Predictive models can now be used by medical experts to spot liver illness in its early stages by utilising the power of machine learning algorithms. Early detection is essential for prompt treatment, intervention, and better patient outcomes.Additionally, by incorporating such medical expert systems in remote and disadvantaged locations, it is possible to close the healthcare gap and give access to precise diagnosis and prognosis.

Algorithms for supervised, unsupervised, semi-supervised, and reinforcement learning have all been widely used for the diagnosis of liver disease among the wide range of machine learning techniques available. Different techniques, including Support Vector Machines (SVM), k-Nearest Neighbours (KNN), K-Mean clustering, neural networks, and decision trees, have demonstrated varied degrees of effectiveness in terms of accuracy, precision, sensitivity, and specificity. To choose the best strategy based on certain diagnostic criteria, it is essential to comprehend the relative performance of different strategies.

In order to predict liver illness, several researchers have used a variety of machine learning algorithms. This work intends to give a thorough survey and comparative analysis of these methods. This study aims to shed light on the potential advantages of utilising machine learning for improved liver disease detection and prediction by reviewing and synthesising the available literature. Accuracy, sensitivity, precision, and specificity will be the main focus of the evaluation criteria in order to shed light on the advantages and disadvantages of various strategies.

Medical personnel can increase the precision and effectiveness of diagnosing liver disease by utilising machine learning technology, opening the door to early therapies and better patient outcomes. The results of this study may lay the groundwork for future developments in the field, encouraging partnerships between medical professionals and data

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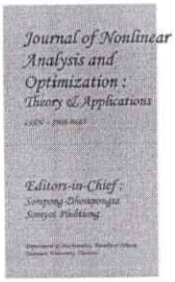

SMART ARTIFICIAL INTELLEGENCE BASED ONLINE PROCTORING SYSTEM

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ABSTRACT
From the past year, Online Examination has become most popular in all the educational fields due to covid-19 However, the institutions are facing a big difficulty in terms of proctoring methods. If the way we are living is to be the new normal then there is a need to find some solution. In this project, we have proposed a solution that to develop an AI-based integrated system that can helps to preventing cheating in examinations and we present some techniques and tools through which the proctor need not to be present throughout the exam. Our AI-based model will be able to detect any unfair in an examination.

Keywords: Proctoring System, Online Tests, Remote Learning, Convolutional Neural Network, Haar Cascade Local Binary Pattern Histogram Algorithm.

I. INTRODUCTION

In India, the number of internet users has nearly doubled in the past 6 years. This proved to be a boon for academics as many students could continue their education. This also facilitated examinations to go online which brought the concept of online proctoring at the academic level. A proctored exam allows the invigilators to invigilate remotely. They use video, audio, and various anti-cheating features to maintain the exam's credibility. Manual online proctoring in the remote examination is a difficult task as many students cannot be invigilated at the same time. During this a teacher can physically monitor students using all the senses, So the idea is to create an AI system that will monitor the student with the webcam and microphone and with that teacher can monitor many students at a time. The system should also keep a record of probable malpractices. Here comes an online proctored exam. This tool helps educational institutions monitor the examination process, preventing any type of cheating. Many online examination providers are using artificial intelligence enabled technologies to proctor tests objectively. These advanced methods involve audio and video access techniques to ensure the candidates do not indulge in any cheating behavior.

The objective of Remote Proctoring software is to supervise students while conducting exams. Thus, developing computer algorithms to Identify students cheating. Student camera access is taken then monitor them for unfair practices. Then AI function is involved. And it helps to find candidates to monitor closely. Online proctoring enabling candidates to take exams from any location. The proctored exam software is used during online proctoring to allow students and proctors to take exams at any place. It must be sufficiently reliable and internet connected. Proctoring an online exam is no longer difficult. A good remote online proctoring system should facilitate movement and sound detection. It must be sufficiently reliable and internet connected. Proctoring an online exam is no longer difficult.

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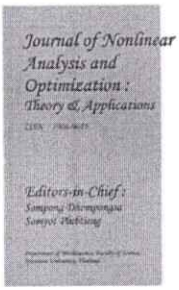

AIR AND NOISE POLLUTION MONITORING SYSTEM

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ABSTRACT
In recent day scenario, the non-stop increase in air and sound pollution prove to be an big alarming problem. It has become mandatory to control and appropriately monitor the situation so that the required steps to control the situation can be undertaken. In this project, an IOT-based method using Raspberry Pi is used to monitor and check live the Air Quality Index and the sound pollution of a region, have been proposed. The recommended technology comprises of two modules namely, the Air Quality Index Monitoring Module, the Sound Intensity Detection Module.
Firstly, the Air Quality Index is measured considering the presence of the air pollutants. Then the sound intensity is detected using respective sensor. System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller. Also system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet.
This allows authorities to monitor air pollution in different areas and take action against it. Also authorities can keep a watch on the noise pollution near schools, hospitals and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue.

I. INTRODUCTION

PROJECT OVERVIEW:

The Raspberry Pi Air and Noise Pollution Monitoring System is an IoT-based project that aims to monitor and analyse air quality and noise pollution levels in real-time. The project utilizes a Raspberry Pi Pico microcontroller along with various sensors, including a dust sensor, gas sensor, and sound sensor. Wireless connectivity is established to enable data transmission, and an LCD display is used to provide visual feedback. The system continuously collects data from the sensors, which are strategically placed in the target environment. The dust sensor measures the concentration of particulate matter (PM) in the air, indicating air quality. The gas sensor detects the presence of specific gases such as carbon monoxide (CO), nitrogen dioxide (NO2), or ozone (O3). The sound sensor captures noise levels and intensity.
The Raspberry Pi Pico, acting as the main control unit, interfaces with these sensors, retrieves the sensor readings, and stores the data in variables or data structures. The system then utilizes wireless connectivity, such as Wi-Fi or Bluetooth, to transmit the collected data to a remote server or an online platform for further analysis and visualization. An LCD display module is integrated into the system to provide real-time feedback by displaying the pollution data and other relevant information. The display can show the current air quality index, noise levels, and alerts when pollution levels exceed specific thresholds.
The project offers numerous advantages, including real-time monitoring, data-driven decision-making, remote access, and customization. It can be applied in various scenarios, such as environmental monitoring, indoor air quality assessment, smart cities, personal health monitoring, research, and education. With future developments, the system can be enhanced by integrating AI and machine learning algorithms for advanced analytics and prediction, integrating with smart home ecosystems for automated actions, and expanding the network of monitoring stations for broader data sharing and collaboration.

MOTIVATION OF PROJECT:

The motivation behind the Raspberry Pi Air and Noise Pollution Monitoring System project stems from the increasing concern and awareness regarding environmental pollution and its impact on human health and well-being. Air pollution, in the form of harmful gases and particulate matter, has been linked to respiratory issues, cardiovascular diseases, and other health problems. Similarly, excessive noise pollution can lead to stress, sleep disturbances, and cognitive impairments. The project aims to address these issues by providing a cost-effective and accessible solution for monitoring air and noise pollution levels.

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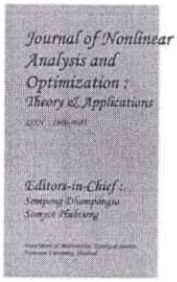

AUTOMATED HAND WHEEL CHAIR FOR DISABLED PEOPLE USING MEMS TECHNOLOGY

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ABSTRACT
The interaction between man and machines has become an important topic for the robotic community as it can generalize the use of robots. With the advancement of technology, different devices are being developed in almost each and every field. With these new devices different applications are also being developed and here is one of such latest inventions "Hand Gesture based Robot". Like we know to control any robot, generally we give some command inputs by pressing some keys, etc to control its direction. But here in this project work, we need not to press any keys, instead by moving the hand in one direction automatically the robot will also move in that particular direction. So depending on the movement of the hand, the robot direction is controlled. This is possible using the MEMS technology. MEMS stand for Micro Electro Mechanical System.
As the robot is wireless control, the MEMS is interfaced to the micro controller in the remote and the wireless information is transmitted through the RF transmitter. The control module will be the MEMS interfaced with the controller to generate command codes and the same is transmitted. Depending on these command codes the micro controller present on the robot, gives instructions to the motors to move in specific directions. The MEMS is like a motion sensor. Slight variation in the X, Y, or Z – axes gives us the voltage variation that is fed to the ADC and the digital information is fed to the controller in the remote. This information is encoded and is transmitted through the RF transmitter. The RF receiver on the robot receives this encoded information and will be given to the controller which decodes the data and operates the robot.

I. INTRODUCTION

IR SENSOR

IR detectors are little microchips with a photocell that are tuned to listen to infrared light. They are almost always used for remote control detection - every TV and DVD player has one of these in the front to listen for the IR signal from the clicker. Inside the remote control is a matching IR LED, which emits IR pulses to tell the TV to turn on, off or change channels. IR light is not visible to the human eye, which means it takes a little more work to test a setup. There are a few difference between these and say a CdS Photocells ():

- IR detectors are specially filtered for Infrared light, they are not good at detecting visible light. On the other hand, photocells are good at detecting yellow/green visible light, not good at IR light
- IR detectors have a demodulator inside that looks for modulated IR at 38 KHz.Just shining an IR LED won't be detected, it has to be PWM blinking at 38KHz. Photocells do not have any sort of demodulator and can detect any frequency (including DC) within the response speed of the photocell (which is about 1KHz)
- IR detectors are digital out - either they detect 38KHz IR signal and output low (0V) or they do not detect any and output high (5V). Photocells act like resistors depending upon how much light they are exposed to.

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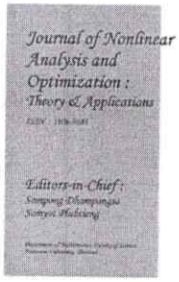

CELL PHONE CONTROLLED FINGERPRINT SOLENOID DOOR LOCK USING ARDUINO AND HC-05

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ABSTRACT
Now the whole world is in the grasp of COVID 19 and everyone is taking precautions wherever they can to prevent themselves from contracting this serious disease by following social distancing, wearing masks, using cashless transactions, and avoids touching anything to prevent the spread of germs. With the advent of technology, the normal locks are becoming things of the past and new biometric-based locks and RFID based locks are becoming more and more mainstream. Fingerprint-based locks and attendance record-keeping devices are used in most of the offices and colleges too but nowadays it is not advisable to do so due to this pandemic and so we are going to build a door lock by using a solenoid lock and control it using an android app over Bluetooth so that we don't have to touch the fingerprint sensor at all and just use your own phones to control the lock.
In this project, we are going to build a biometric lock using Arduino nano with Bluetooth Module. Solenoid lock, and Android phone. Apart from hardware, a mobile application is also used to scan and verify the fingerprint and send the confirmation ID to Arduino through Bluetooth.
Here we will use Smart Phone Finger Print Sensor to lock and Unlock the Door lock. We know that, the entire globe is infected with Covid 19, and everyone is doing everything they can do avoid contracting this serious sickness by adhering to social segregation, wearing coverings, using credit-only exchanges, and refraining from contacting anything to prevent the spread of germs. With the advancement of technology, traditional locks are becoming relics of the past, while new biometric based locks and Radio Frequency Identification (RFID) – based locks are becoming increasingly in common.

I. INTRODUCTION

1.1 Introduction

The unique finger impression-based locks, as well as participation record – keeping Devices, are used in the vast majority of offices and universities. However Due to the pandemic, it is no longer appropriate to do so. As a result, the proposed system uses a solenoid lock to make the door lock.
Aside from equipment, a mobile application is used to inspect and double check the finger impression and send the confirmation as well as I'd. To Arduino through Bluetooth. The entryway lock will be bolted and opened using smartphone fingerprint sensor.
Now the whole world is in the grasp of COVID 19 and everyone is taking precautions wherever they can to prevent themselves from contracting this serious disease by following social distancing, wearing masks, using cashless transactions, and avoids touching anything to prevent the spread of germs.
With the advent of technology, the normal locks are becoming things of the past and new biometric-based locks and RFID based locks are becoming more and more mainstream. Fingerprint-based locks and attendance record-keeping devices are used in most of the offices and colleges too but nowadays it is not advisable to do so due to this pandemic and so we are going to build a door lock by using a solenoid lock and control it using an android app over Bluetooth so that we don't have to touch the fingerprint sensor at all and just use your own phones to control the lock. So, let's get started.

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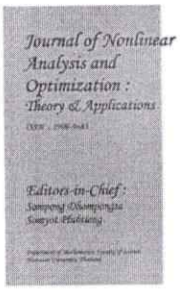

DENSITY BASED TRAFFIC LIGHT CONTROLLER

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ABSTRACT

In present days, vehicular traffic is increasing throughout the world, especiallyin urban areas. As the number of road user's increase constantly a smart traffic control will become a very important issue in the future. Congestion in traffic is becoming a serious issue. Many vehicles are waiting at the signal for a long time due to this the time consumption is more for the human and there is a lot of problemfor the people who go to their work and some to the business works.

In existing system the traffic control is not according to the density, and is notreducing the effect of traffic in urban areas. The traffic signals are preparedpreviously fixed for some time only after that time the signal will be changed to another signal. This makes the other side roads delay for long time. In some placestraffic lights did not work properly.

Vehicle count is measured and accordingly the traffic will be reduced. Emergency vehicles like ambulance and fire are easily allowed from the traffic by using the RF transmitter and receiver. Vehicles like ambulance send the signal to the receiver and make the green signal to glow on that road. This makes the safety of the people in the ambulance and this will be applicable to fire vehicles also. IR sensors are used to avoid the crossings of the road when the red light is on. Traffic updates are monitored with help of density based traffic light controller.

I. INTRODUCTION

Density-based traffic light controllers are intelligent systems that aim to optimize traffic flow by dynamically adjusting the signal timings based on the real-time traffic density at each intersection. These controllers utilize advanced technologies such as sensors, microcontrollers like Arduino, and algorithms to improve traffic efficiency and reduce congestion.

This project aims to improve the efficiency of traffic light system using Arduino based model. The traffic determination is done by IR sensors on each path.Using the details provided by the IR sensor we can guide the traffic signal to work efficiently with the traffic flow. The traffic density on each road determines the change of the timing of the signal. The road with the least traffic is assigned with the red signal and the one with the most traffic is assigned the green signal. In this project we imply the use if IR sensor to wok accordingly with Arduino to provide a better and efficient traffic light control system. We propose this paper with the idea of improving the traffic light system resulting in reducing the jamming levelhenceforth eradicating the problems like loss of fuel, energy dissipation, pollution and time loss. For the betterment of the nation the necessity to improve the traffic light system is very much necessary. The programming for the easy change in traffic light will result in the better movement of vehicles resulting in safe and easy flow oftraffic density. This will also help to reduce major accidents like car crashes causeddue to confusion of traffic lights due to the drivers and also problems caused due totrespassing of lanes. This system can be helpful to provide better traffic control in urban cities.

The Arduino platform, known for its versatility and ease of use, is commonly employed to develop and implement density-based traffic light controllers. Arduinoboards are equipped with various input and output pins makingthem suitable for interfacing with sensors and controlling traffic lights

Project Elaboration

The density-based traffic light controller project aims to optimize traffic flow at intersections by dynamically adjusting the signal timings based on real-time vehicle density.

Our project aims at reducing traffic congestion and unwanted long timedelay during the traffic light switch over especially when the traffic is very low.It is designed to be implemented in places nearing the junctions where the trafficsignals are placed, in order to reduce the congestion in these junctions. It keepsa track of the vehicles in each road and accordingly adjusts the time for each traffic light signal. The higher the number of vehicles on the road the longer willbe the time delay allotted for that corresponding traffic light signal. The main purpose of this project is, if there will be no traffic on the other signal, one shouldn't wait for that signal. The system wi

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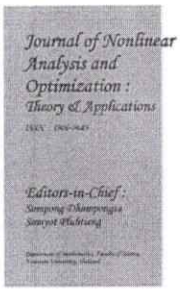

MOVABLE ROAD DIVIDER FOR VEHICULAR TRAFFIC CONTROL

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ABSTRACT
Divider is generically used for dividing the Road for ongoing and incoming traffic.This helps keeping the Flow of traffic; generally there is equal number of lanes for both ongoing and incoming traffic. The problem with Static Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of cars per family is increasing, there is significant increase in number of cars on roads. This calls for better utilization of existing resources like number of lanes available.
Our aim is to formulate a mechanism of automated road divider that can shift lanes, so that we can have number of lanes in the direction of the rush. The cumulative impact of the time and fuel that can be saved by adding even one extra lane to the direction of the rush will be significant.so that we can have a smarter city traffic all over the city.

I. INTRODUCTION

Road Divider is generically used for dividing the Road for ongoing and incoming traffic. Thishelps keeping the flow of traffic; generally there is equal number of lanes for both ongoing and incoming traffic. The problem with Static Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of carsper family is increasing, there is significant increase in number of cars on roads. This calls for better utilization of existing resources like number of lanes available.
For example, in any city, there is industrial area or shopping area where the traffic generally flows in one direction in the morning or evening. The other side of Road divider is mostly either empty or very under utilized. This is true for peak morning and evening hours. Thisresults in loss of time for the car owners, traffic jams as well as under utilization of available resources.
Our aim is to formulate a mechanism of automated road divider that can shift lanes, so that we can have number of lanes in the direction of the rush. The cumulative impact of the timeand fuel that can be saved by adding even one extra lane to the direction of the rush will be significant. With the smarter planet application proposed below, we will also eliminate the dependency on manual intervention and manual traffic coordination so that we can have a smarter traffic all over the city.
Objective of the project
A movable road divider is a traffic control device used to separate lanes of vehicular traffic. It istypically designed to be easily moved and repositioned as needed. Movable road dividers serve several objectives in traffic control:
Lane Management: Movable Road dividers help manage traffic flow by creating and separating lanes. They can be used to establish temporary lanes during road construction or events, or to adjust the number of lanes based on traffic conditions.
Traffic Safety: Dividers act as physical barriers, providing a clear separation between lanes. This helps prevent vehicles from merging or crossing into adjacent lanes, reducing the risk of collisions and improving overall road safety.
Traffic Guidance: Movable Road dividers are often equipped with reflective materials or signage, enhancing their visibility and providing directional guidance to drivers. They can indicate lane closures, detours, or specific traffic patterns, helping drivers navigate through complex road layouts.
Flexibility: The movable nature of these dividers allows for flexibility in traffic management. They can be easily reconfigured or relocated to adapt to changing traffic conditions, accommodate temporary roadwork, or facilitate special events.
Emergency Response: In emergency situations, movable road dividers can be used to quickly establish traffic diversions or create temporary lanes for emergency vehicles. They assist in maintaining order and facilitating efficient emergency response.Block Diagram

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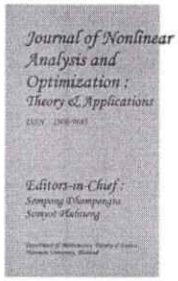

RASPBERRY PI BASED FARMING ROBOT WITH PLANT HEALTH INDICATION USING IMAGE PROCESSING

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ABSTRACT
Agriculture is a most important and ancient occupation in India. As an economy of India is based on agricultural production, utmost care of food production is necessary. Virus, fungus and bacteria such pest causes infection to plants with loss in quantity and quality production. Because of that large amount of loss in production. Hence proper care of plants is necessary for same. This project presents an overview of Raspberry Pi based Farming Robot using Image Processing methods to detect various plant diseases. Farming Robot provides more efficient ways to detect diseases caused by fungus, bacteria or virus on plants. More observations by eyes to detect diseases are not accurate. Overdose of pesticides causes harmful chronic diseases on human beings. Nowadays due to spraying of pesticides on crop framers suffer from many chronic diseases that even caused death of farmer. Excess use also damages plants nutrient quality. It results in huge loss of production to farmer. Hence use of Raspberry Pi based Farming Robot using Image Processing methods to detect and classify diseases in agricultural applications is helpful.

I. INTRODUCTION

1.1 INTRODUCTION:

Agriculture is an ancient career. It performs a crucial role in our daily existence. Food is basic need of all people. To distribute meals among massive population desires proper amount of manufacturing. In India huge variety of populace lives in rural areas where livelihood of humans relies upon totally on agriculture. Accordingly Indian economic system on the whole relies upon on agriculture. Hence increasing first-rate production has grown to be necessary every day. Monitoring of crop/vegetation and their control from early degree is crucial. It consists of numbers of obligations like preparation of soil, seeding, including manure and fertilizer, irrigation, ailment detection, spraying pesticides, harvesting and garage. Among these spraying proper amount of pesticides needs to be taken proper care. Pesticides are used to attract, seduce and break pests subsequently known as crop protection product. Pesticides are prepared by using dangerous chemicals or every so often by using organic strategies to kill pests, weeds or infections on plant. India is a cultivated country and approximately 70% of the populace depends on agriculture. Farmers have massive range of variety for choosing diverse suitable vegetation and finding the suitable pesticides for plant. Disorder on plant results in the large reduction in both the satisfactory and quantity of agricultural merchandise. The studies of plant ailment confer with the research of visually observable patterns at the plant life. Tracking of fitness and sickness on plant perform a vital role in a success cultivation of vegetation within the farm. In early days, the monitoring and analysis of plant diseases have been finished manually by using the information individual in that field. This call for first rate amount of work and additionally calls for excessive processing time. The photograph processing techniques can be used within the plant sickness detection. In maximum of the cases sickness symptoms are seen on the leaves, stem and fruit. Today various means are available to increase yield in production and reduce human efforts. Technologies have been vastly developed and spread in all fields including agriculture. One of the inventions is agricultural Robot. Agricultural robot is an agricultural robot used for performing various agricultural tasks. It performs all sorts of agricultural tasks. This reduces human efforts, increases yield and decreases cost of labor. Due to which one gets healthy food. Deep neural networks are now the

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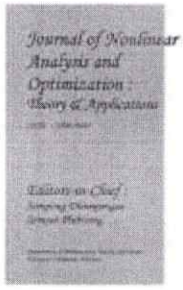

SPEECH-BASED MULTI DISPENSER SYSTEM

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ABSTRACT

The speech-based multi dispenser system is an innovative project that integrates speech recognition, artificial intelligence (AI), machine learning (ML), and Raspberry Pi to create a smart liquid dispensing solution. The system aims to provide convenient and precise control over the dispensing based on voice commands from the user. The project utilizes a Raspberry Pi as the central control unit, along with a motor driver IC (such as L293D) to control the dispensing mechanism. The system incorporates a microphone to capture voice commands, which are processed using AI and ML algorithms to accurately recognize and interpret the user's instructions. Upon receiving a valid voice command, the system translates it into specific actions for the motor driver IC. The motor driver IC controls the motors responsible for dispensing, enabling accurate and controlled dispensing according to the user's request.

Additionally, the project is complemented with a mobile app interface that displays the status of the motors. The advantages of the speech-based multi-liquid dispenser system include ease of use, hands-free operation, precise liquid dispensing, remote control capabilities, and the ability to customize and monitor dispensing settings. The project opens up possibilities for various applications such as automated beverage dispensing, chemical mixing, pharmaceutical preparations, and more. By incorporating AI and ML techniques, the system can continuously improve its voice recognition capabilities and adapt to user preferences over time. The integration of Raspberry Pi and motor driver IC allows for seamless control and automation of the dispensing process.

Overall, the speech-based multi dispenser system offers a user-friendly and intelligent solution for precise liquid dispensing, combining the power of voice recognition, AI, ML, and Raspberry Pi to enhance convenience and efficiency in various dispensing applications.

I. INTRODUCTION

INTRODUCTION TO SPEECH-BASED MULTI DISPENSER SYSTEM

1.1 Introduction of Embedded System

An Embedded System is a combination of computer hardware and software, and perhaps additional mechanical or other parts, designed to perform a specific function. A good example is the microwave oven. Almost every household has one, and tens of millions of them are used every day, but very few people realize that a processor and software are involved in the preparation of their lunch or dinner.

This is in direct contrast to the personal computer in the family room. It too is comprised of computer hardware and software and mechanical components (disk drives, for example). However, a personal computer is not designed to perform a specific function rather; it is able to do many different things. Many people use the term general-purpose computer to make this distinction clear. As shipped, a general-purpose computer is a blank slate; the manufacturer does not know what the customer will do wish it. One customer may use it for a network file server another may use it exclusively for playing games, and a third may use it to write the next great American novel.

Frequently, an embedded system is a component within some larger system. For example, modern cars and trucks contain many embedded systems. One embedded system controls the anti-lock brakes, other monitors and controls the vehicle's emissions, and a third displays information on the dashboard. In some cases, these embedded systems are connected by some sort of a communication network, but that is certainly not a requirement.

At the possible risk of confusing you, it is important to point out that a general-purpose computer is itself made up of numerous embedded systems. For example, my computer consists of a keyboard, mouse, video card, modem, hard drive, floppy drive, and sound card-each of Which is an embedded system? Each of these devices contains a processor and software and is designed to perform a specific function. For example, the modem is designed to send and receive digital data over analog telephone line. That is, it and all of the other devices can be summarized in a single sentence as well.

If an embedded system is designed well, the existence of the processor and software could be completely unnoticed by the user of the device. Such is the case for a microwave oven, VCR, or alarm clock. In some cases, it would even be possible to build an equivalent device that does not contain the processor and software. This could be done by replacing the combination with a custom integrated circuit that

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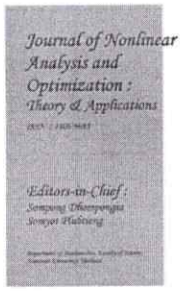

HEAT TRANSPORT AND BIO-CONVECTIVE NANOMATERIAL FLOW OF WALTER'S-B FLUID CONTAINING GYROTACTIC MICROORGANISMS

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ABSTRACT:

This research work highlight the newly developed concept of Rosseland approximation and gyrotactic microorganisms in steady, two-dimensional, incompressible flow of Walter's-B nanofluid (non-Newtonian) over a stretchable surface of sheet. Buongiorno nanofluid model, which represents seven important slip mechanisms (i.e., Brownian motion, inertia, Magnus impact, thermophoresis, diffusion-phoresis, gravity and fluid drainage) is utilized in the mathematical modeling of governing expressions. In this research work, only two important factors of seven slip mechanisms (Brownian diffusion, thermophoresis) are studied and the rest of neglected. Furthermore, the Rosseland approximation and heat generation/absorption effects are used in the modeling of the energy equation. The behavior of thermal and solutal stratification effects are addressed at the stretched boundary of the sheet. The nonlinear dimensional flow expressions lead to dimensionless ordinary equations through appropriate similarity transformations. The total residual error is calculated through Homotopy Analysis Method (HAM) for the momentum, temperature, concentration and motile density. The influences of important flow parameters of the governing flow equations are discussed and plotted graphically. The obtained results are compared with fruitful and valuable research in the literature and found very good agreement with them. Over obtained outcomes highlight that the velocity field, declined versus higher estimations of Weissenberg number. It is also remarked that the temperature and concentration fields have contrast impact subject to thermophoresis parameter. The physical quantities like skin friction coefficient, motile density, concentration and Nusselt number are discussed physically via various flow parameters.

Keywords: Walter's-B nanofluid (non-Newtonian fluid) Rosseland approximation Gyrotactic microorganisms Heat generation/absorption Thermophoresis diffusion Brownian motion.

1. Introduction:

Boundary layer flow of non-Newtonian materials play an important role in the modeling of several manufacturing processes in industrial and mechanical engineering. Some of these manufacturing processes comprise adhesive tapes fabrication, plastic

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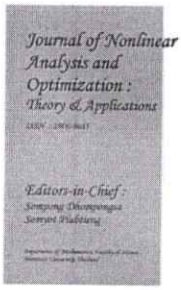

MULTISCALE STOCHASTIC REACTION-DIFFUSION ALGORITHMS COMBINING MARKOV CHAIN MODELS WITH STOCHASTIC PARTIAL DIFFERENTIAL EQUATIONS

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Abstract

We analyze two multiscale methods for reaction-diffusion process stochastic simulations. They can be used in systems that contain areas where the concentrations of molecules differ noticeably. Both approaches split an interest region into two subsets, one for stochastic partial differential equations (SPDEs) and the other for continuous-time Markov chain models. The first approach considers a pseudo compartment (also known as an overlap or handshaking zone) in the SPDE portion of the computational domain immediately next to the interface in order to associate Markov chain (compartment-based) models with reaction-diffusion SPDEs. There is no usage of an overlap zone in the second algorithm. Additional developments of both schemes are showcased, encompassing the scenario of an adaptively selected boundary separating distinct modeling methodologies.

Keywords: Gillespie algorithm, multiscale modeling, chemical reaction networks, Markov chain, stochastic reaction-diffusion systems, and stochastic partial differential equations

1 Introduction

Stochastic models of well-mixed chemical systems are traditionally formulated in terms of continuous time Markov chains, which can be simulated using the Gillespie stochastic simulation algorithm (SSA) [42] or its equivalent formulations [12, 41, 60]. These algorithms provide statistically exact sample paths of stochastic chemical models described by the corresponding chemical master equation (CME). However, they can be computationally expensive for larger chemical systems, because they explicitly simulate each occurrence of each chemical reaction. A number of approaches have been developed in the literature to decrease the computational intensity of SSAs. Taking into account separation of time scales, chemical reaction networks can be simplified by model reduction before they are simulated [51–54, 58]. The idea of model reduction can also be used to develop computational methods which efficiently estimate quantities of interest from stochastic simulations [10, 11, 13, 26]. Another approach is to describe the molecular populations in terms of their concentrations that change continuously (rather than treating them as discrete random variables). This can be achieved by the chemical Langevin equation, which is a stochastic differential equation

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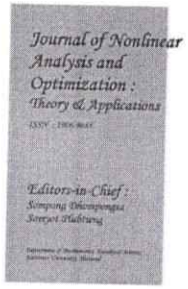

ANALYSIS AND IMPROVEMENT OF DIESEL ENGINE PERFORMANCE USING KARANJA BIODIESEL

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ABSTRACT

One of the most effective strategies for reducing carbon dioxide emissions is switching to biodiesel, a renewable fuel that may be used in place of diesel. The experimental emphasis of this study is biodiesel refined from Pangomia Pinnata oil (Karanja oil). The physical and chemical properties of Karanja Biodiesel and its mixtures are investigated and compared to petroleum diesel. In addition, the performance characteristics of diesel engines fuelled with Karanja biodiesel were evaluated using blends of Karanja biodiesel (KB5, KB10, KB15, KB20, KB25) comprising 5%, 10%, 15%, 20%, and 25% of Karanja biodiesel, respectively. Under a constant load, the thermal efficiency, fuel consumption, and power of the brakes were evaluated at a range of engine speeds. We also used Response surface methods to zero in on the best set of operating settings for the engine under typical situations. The RSM model employed a CCD framework with three factors, five levels, and two blocks. Each goal was optimised using the response surface optimizer in the Minitab®16.2.1 statistical programme, and the optimal values for S (1900 rpm), B (13%), and T (33 N.m) were discovered to maximise engine performance while minimising fuel consumption.

Biodiesel, Karanja, RSM, CCD are some examples of keywords.

1. Introduction

The depletion of conventional fuel resources has been caused by the steady rise in the pace of fossil fuel consumption, as well as the world's rising population and urbanisation. Additionally, the greenhouse gas emissions from these fossil fuels are continuously destroying the earth and contributing to other pollution-related issues like global warming. As a result, the scenario calls for a different type of energy that can be employed to get over the anticipated energy crisis in the future. Additionally, the environmental problems will be lessened if the energy source is clean and renewable. Biodiesel-diesel blends as alternative fuels have emerged as one of the solutions that scientists have developed in their search for a new, renewable source of energy.

Oils, both edible and non-edible, are used to make biodiesel. Due to the significant disparity between the supply and demand of edible oils in India, it is not practical to use edible oils for the manufacturing of biodiesel. Additionally, the large-scale production of crops for biodiesel fuel may result in an increase in the cost of food and other commodities globally. Contrary to edible oil, non-edible oils including those from jatropha, castor, karanja, rubber seed, and sea mango are hazardous and should not be consumed by humans. Biodiesel made from Karanja is used as fuel in this project work.

The objectives of this study is to evaluate the Engine Performance of four stroke Diesel Engine fuelled with Karanja Biodiesel & its Blends and also to determine Optimal engine operating parameters at standard conditions by using Response surface methodology model.

2. METHODOLOGY USED :

2.1 Response surface methodology :

The response surface methodology (RSM), which models and analyses processes in which the response of interest is influenced by many variables, is a commonly used statistical and mathematical

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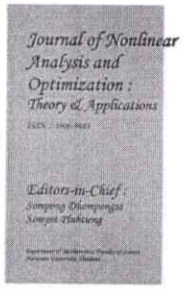

DESIGN AND ANALYSIS OF TURBO CHARGER TURBINE WHEEL USING COMPOSITE MATERIALS

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ABSTRACT:
A turbocharger is a turbine that compresses and drives air into a combustion chamber of an internal combustion engine, increasing the volumetric efficiency of a naturally aspirated engine. A compressor is connected to the exhaust turbine and speeds up the exhaust turbine with the help of exhaust gases. This allows a smaller displacement engine to burn more fuel more effectively, resulting in more power being produced. As with a conventional turbocharger, the electric turbocharger spools up and compresses air into the engine when it is activated. 3D modelling software, CREO, is used to create a turbine blade that is then analyzed using ANSYS 14.5 software. The base of the blade is modified to improve cooling efficiency in the design. When designing turbo equipment, material selection is critical since the design is complex and the efficiency is directly linked to the performance of the materials. In this project, two different fluid flow conditions (i.e., laminar and turbulent flow) are considered for present and modified models. Optimization is done by varying the materials Chromium steel, Titanium alloy and Nickel Alloy by performing coupled field analysis (static + thermal) on the turbine blades for both the designs.

I. INTRODUCTION

1.1 Turbo charger:

Turbocharging is a common feature of diesel engines, as it increases overall performance and efficiency. The engine's specific fuel consumption can be drastically decreased by properly utilizing the turbocharger. Compressor impellers and turbine impellers were mounted on either side of the turbocharger. Both impellers must function in succession to compress and expand the air simultaneously. Material selection for impeller design has a considerable impact on overall efficiency. During operation, the impeller material must be able to endure the high pressure of the incoming compressed air. Researchers tested a slew of materials in an effort to boost the diesel engine impeller's efficiency. Turbocharger performance is greatly influenced by the angle of the impeller. Material features of Inconel alloy were used to choose and simulate a new turbocharger design that had a 15% improvement over the current design. Many researchers have also tested the use of nickel alloy and titanium in the impellers of turbochargers. Researchers have also created and experimented with a variety of composite materials in order to fit the unique qualities required by the impellers. The difficulty in converting a composite material for use in impeller production lies in the time- and money-consuming process of near net form machining.

Engineer Alfred Buchi of Switzerland completed the first exhaust gas turbocharger in 1925, introducing a prototype that increased a diesel engine's power by 40 percent, according to one report. However, turbocharging was not commonly acknowledged at the time. With the exception of relatively small diesel engines, it has become important in the last several decades in practically all diesel engines. It is now mandatory. Its limited application in gasoline motors has also resulted in a significant increase in power output and effectiveness. In the same way as other turbo machines, their whole design includes mechanical, aerodynamic, thermal, and acoustic assessments as part of the overall process. Engineers and scientists are still looking for ways to improve their ideas despite being constrained by rules about cost and manufacturing capacity.. Initially, scientists just attempted to translate conceptual designs into usable consumer goods. Turbochargers of this size were intended for naval use, where they were primarily found. Since the turbochargers' performance was a primary priority, their research was focused on thermodynamics. An in-depth study of the dynamics of rotating blades is today an important element of the design process. However

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Analysis And Design of G+3 Residential Building

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ABSTRACT

In order to compete in the ever-growing competent market it is very important for a structural engineer to save time. As a sequel to this an attempt is made to analyze and design a multistoried residential building by using a software package STAAD.Pro. For analyzing a multi storied building one has to consider all the possible loadings and see that the structure is safe against all possible loading conditions. The present project deals with the analysis and design of a multi storied residential building of G+3. The dead load, live loads and wind loads are applied and the design for beams and columns is obtained STAAD.Pro with its new features surpassed its predecessors and compotators with its data sharing capabilities with other major software like AutoCAD.

Keywords: *STAAD. Pro, dead load and live loads and wind loads, Multi-storey building, AutoCAD, Concrete mix.*

1. INTRODUCTION

General

The importance of wind engineering is emerging in India ever since the need for taller and slender buildings is coming forth. Considering the ever-increasing population as well as limited space, horizontal expansion is no more a viable solution especially in metropolitan cities. There is enough technology to build super-tall buildings today, but in India we are yet to catch up with the technology which is already established in other parts of the world. Nowadays, Construction of high-rise building is a basic need because of scarcity of land. Conventional method of manual design of high-rise building is time consuming as well as possibility of human errors. So it is necessary to use some computer based software which gives more accurate results and reduce the time.

STAAD-PRO is the structural software is nowadays accepted by structural engineers which can solve typical problem like static analysis, wind analysis, using various load combination to confirm various codes. Many times, wind engineering is being misunderstood as wind energy in India. On the other hand, wind engineering is unique part of engineering where the impact of wind on structures and its environment being studied. More specifically related to buildings, wind loads on claddings are required for the selection of the cladding systems and wind loads on the structural frames are required for the design of beams, columns, lateral bracing and foundations. Wind in general governs the design when buildings are above 150 m height. However the other force which effect most on high rise building are the lateral forces caused by earthquakes. When buildings grow taller, they become flexible and they are

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A Time Frequency Based Suspicious Activity Detection for Anti-Money Laundering

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ABSTRACT: Money laundering is the crucial mechanism utilized by criminals to inject proceeds of crime into the financial system. The primary responsibility of the detection of suspicious activity related to money laundering is with the financial institutions. Most of the current systems in these institutions are rule-based and ineffective (over 90 % false positives). The available data science-based anti-money laundering (AML) models to replace the existing rule-based systems work on customer relationship management (CRM) features and time characteristics of transaction behaviour. Due to thousands of possible account features, customer features, and their combinations, it is challenging to perform feature engineering to achieve reasonable accuracy. Aiming to improve the detection performance of suspicious transaction monitoring systems for AML systems, in this article, we introduce a novel feature set based on time-frequency analysis, that uses 2-D representations of financial transactions. Random forest is utilized as a machine learning method, and simulated annealing is adopted for hyperparameter tuning. The designed algorithm is tested on real banking data, proving the results' efficacy in practically relevant environments. It is shown that the time-frequency characteristics are discriminatory features for suspicious and non-suspicious entities. Therefore, these features substantially improve the area under curve results (over 1%) of the existing data science-based transaction monitoring systems. Using time-frequency features alone, a false positive rate of 14.9% has been achieved, with an F-score of 59.05%. When combined with transaction and CRM features, the false positive rate is 11.85%, and the F-Score is improved to 74.06%

I. INTRODUCTION:

Money laundering (ML) is the umbrella under which the legitimization of the proceeds of crime is attempted while laundered money can be both re-inserted into the legitimate economy and re-used to fuel further criminal activities. All major criminality such as drug and human trafficking, terrorism, extortion, kidnap-for-ransom, bribery, embezzlement, tax evasion, corruption and a multiplicity of other offenses (also known as predicate offenses) are connected through ML. Even though it is impossible to provide an accurate estimate of the size of such a complex underground market, the International Monetary Fund (IMF) indicates that every year, up to 2 trillion USD is laundered through financial systems globally, making ML one of the world's largest markets. To tackle this issue, most countries following the Financial Action Task Force (FATF) recommendations set up an anti-money laundering (AML) structure, as shown in Fig.1. It is the responsibility of the financial institutions to report suspicious activities to the Financial Intelligence Unit (FIU). The FIU collects intelligence from all different financial institutions

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Block Chain Based Certificate Validation

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ABSTRACT:
In the digital world, each and everything is digitalized in which the certificate of SSLC, HSC, and academic certificate are digitalized in the educational institution and provided to the students. Students are difficult to maintain their degree certificates. For the organization and institution, verification and validation of certificates are tedious and cumbersome. Our project will help to store the certificate in the blockchain system and provide security. First, the paper certificates are converted into digital certificates. The chaotic algorithm is used to generate the hash code value for the certificate. Then the certificates are store in blockchain. And these certificates are validated by using the mobile application. By using blockchain technology we can provide a more secure and efficient digital certificate validation.

I. INTRODUCTION

Advances in information technology, the wide availability of the Internet, and common usage of mobile devices have changed the lifestyle of human beings. Virtual currency, digital coins originally designed for use online, has begun to be extensively adopted in real life. Because of the convenience of the Internet, various virtual currencies are thriving, including the most popular—Bit coin, Ether, and Ripple —the value of which has surged recently. People are beginning to pay attention to block chain, the backbone technology of these revolutionary currencies. Block chain features a decentralized and incorruptible database that has high potential for a diverse range of uses. Block chain is a distributed database that is widely used for recording distinct transactions. Once a consensus is reached among different nodes, the transaction is added to a block that already holds records of several transactions. Each block contains the hash value of its last counterpart for connection. All the blocks are connected and together they form a blockchain. Data are distributed among various nodes (the distributed data storage) and are thus decentralized. Consequently, the nodes maintain the database together. Under blockchain, a block becomes validated only once it has been verified by multiple parties. Furthermore, the data in blocks cannot be modified arbitrarily. A blockchain-based smart contract, for example, creates a reliable system because it dispels doubts about information's veracity. Because information technology has developed rapidly in recent years, data protection is more necessary than ever.

Graduates, whether they choose to continue studying or start job hunting, require various certificates for interviews. However, they often find that they have lost their educational and commendation certificates. Reapplying for hard copies can be time-consuming because certificates are granted by different organizations and in-person application may be necessary. By contrast, applying for an e-copy can save paper and time. By providing information for identity verification, graduates are able to apply for any certificate easily. Nevertheless, because of this convenience, forged degree certificates, licenses, and certificates are prevalent. Consequently, schools and companies cannot instantly validate the documents they receive. To solve this problem, a certificate system based on block chain was designed in this study. Data are stored in different nodes, and anyone who wishes to modify a particular internal datum must request that other nodes modify it simultaneously. Thus, the system is highly reliable.

In this study, we developed a decentralized application and designed a certificate system based on E/there umblockchain. This technology was selected because it is incorruptible, encrypted, and trackable and permits data synchronization. By integrating the features of blockchain, the system improves the efficiency operations at each stage. The system saves on paper, cuts management costs, prevents document forgery, and provides accurate and reliable information on digital certificates.

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Diagnosing Covid-19 Using Graphical User Interface: A Deep Learning Approach

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ABSTRACT:

The COVID-19 pandemic has thrown the world into an unprecedented state of chaos, halting travel and claiming the lives of tens of thousands of people. COVID-19 continues to pose a serious hazard to public health. The infection can be fought using AI, according to this article (AI). It has been shown that Generative Adversarial Networks (GANs) can be used to achieve this purpose (GAN).. These platforms make it easy for doctors and researchers to access information from a wide range of sources, both structured and unstructured, using an integrated bioinformatics approach. Artificial Intelligence (AI) technologies can help speed up diagnosis and therapy for COVID-19. There were a lot of medical reports analysed for the aim of selecting inputs and targets for an Artificial Neural Network-based tool for COVID-19 difficulties. In addition, this platform's inputs include numerous data types, such as clinical data and medical imaging, that can increase the performance of the introduced technique toward the best results in practical applications.

1.INTRODUCTION

The COVID-19 respiratory pandemic was started in December 2019 by the novel coronavirus known as SARS-CoV-2. COVID-19 proven to be a difficult sickness that can manifest in a variety of forms and levels of severity ranging from moderate to severe with the risk of organ failure and death. everything from a little, self-limiting respiratory infection to a serious, progressive pneumonia, multiorgan failure, and death. There are good grounds to be extremely concerned about the effects of this viral infection given the progression of the pandemic, the rising number of verified cases, and the individuals who suffer from severe respiratory failure and cardiovascular problems.

There has been a lot of focus on choosing the best strategies to address the issues associated to COVID-19. However, the ever-increasing volume of data, also known as big data, that challenges researchers and decision-makers in the process of combating the virus, is a significant difficulty as well. This explains how and to what extent Artificial Intelligence (AI) could be important for creating and improving global health care systems. Recently, more study has been put into using AI to address complicated problems in a variety of disciplines, including engineering, medicine, economics, and psychology.

Therefore, in a situation this critical, it is necessary to mobilise and save human, logistical,

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ECG Anomaly Detection Using Autoencoders

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ABSTRACT:

While the big data revolution takes place, large amounts of electronic health records, such as electrocardiograms (ECGs) and vital signs data, have become available. These signals are often recorded as a time series of observations and are now easier to obtain. In particular, with the rise of smart devices that can perform ECG, there is the quest for developing novel approaches that allow monitoring these signals efficiently, and quickly detect anomalies. However, since most data generated remains unlabeled, the task of anomaly detection is still very challenging.

Unsupervised representation learning using deep generative models has been used to learn expressive feature representations of sequences that can make downstream tasks, such as anomaly detection, easier to execute and more accurate. We propose an approach for unsupervised representation learning of ECG sequences using an autoencoder and use the learned representations for anomaly detection using multiple detection strategies. We tested our approach on the ECG5000 electrocardiogram dataset of the UCR time series classification archive. Our results show that the proposed approach is able to learn expressive representations of ECG sequences, and to detect anomalies with scores that outperform other both supervised and unsupervised methods.

KEYWORDS *– ECG(Electrocardiogram), Machine Learning,Time series data , Signal Processing, Cardiac arrhythmia.*

I.INTRODUCTION:

The detection of anomalies is important to many contemporary applications and continues to be of paramount importance with the explosion of sensor use Anomaly detection in electrocardiogram (ECG) time series data has recently received considerable attention due to its impact on controlling the quality of ECG time series processes and identifying abnormal data source behavior. The process of anomaly detection in time series data involves the use of complicated algorithms and models to detect anomalous data within a selected period. An effective anomaly detector can recognize the contrasts between normal and anomalous time series data.

As the demand for real-time anomaly detection is increasing nowadays, the necessity for intelligent, robust, and computationally efficient models has been realized and is beginning to gain more attention in most live applications. These models play a critical role in most time series applications due to the inevitability of error incidence. The properties of time series data are critical for selecting the appropriate approach to designing a suitable anomaly

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Image Forensic for Digital Image Copy Move Forgery Detection

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ABSTRACT:
Due to the powerful image editing tools images are open to several manipulations; therefore, their authenticity is becoming questionable especially when images have influential power, for example, in a court of law, news reports, and insurance claims. Image forensic techniques determine the integrity of images by applying various high-tech mechanisms developed in the literature. In this paper, the images are analyzed for a particular type of forgery where a region of an image is copied and pasted onto the same image to create a duplication or to conceal some existing objects. To detect the copy-move forgery attack, images are first divided into overlapping square blocks and DCT components are adopted as the block representations. Due to the high dimensional nature of the feature space, Gaussian RBF kernel PCA is applied to achieve the reduced dimensional feature vector representation that also improved the efficiency during the feature matching. Extensive experiments are performed to evaluate the proposed method in comparison to state of the art. The experimental results reveal that the proposed technique precisely determines the copy-move forgery even when the images are contaminated with blurring, noise, and compression and can effectively detect multiple copy-move forgeries. Hence, the proposed technique provides a computationally efficient and reliable way of copy-move forgery detection that increases the credibility of images in evidence centered applications.

I.INTRODUCTION

With the advancements in imaging technologies, the digital images are becoming a concrete information source. Mean-while, a large variety of image editing tools have placed the authenticity of images at risk. The ambition behind the image content forgery is to perform the manipulations in a way, making them hard to reveal through the naked eye, and use these creations for malicious purposes. For instance, in 2001, after the 9/11 incident, several videos of Osama bin Laden over the social media were found counterfeited through the forensic analysis [1]. In the same way, in 2007, an image of tiger in forest forced the people to believe in the existence of tigers in the Shanxi province of China. The forensic analysis,however, proved the tiger to be a "paper tiger" [2]. Similarly, in 2008, an official image of four Iranian ballistic missiles was found to be doctored, as one missile was revealed to be duplicated [3].

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Iris Recognition Using Machine Learning Techniques

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ABSTRACT

One of the main results of the validation system is based on the fingerprint based iris recognition system and respective technology. The entire biometric process is very much authentic and unique than the other types of recognition system and validation process. This has provided innovative ideas in the daily lives of human beings. The multimodal biometric process has generally applied various types of applications for properly dealing with the appropriate and most significant limitations of the "unimodal biometric system". The entire process has been generally included with the proper sensitivity of noise, the population coverage areas, variability cases of the inter class and intra class issues, vulnerability cases of possible hacking and the non universality criteria. The entire research paper has been mainly focused on the deep learning oriented machine learning system. The fingerprint based iris recognition system to do the proper validation of human beings has been mainly done by convolutional neural network (CNN) technique. In the existing data validation process, the iris recognition system has been mainly done with respect to the "high security protection system with actual fingerprints". The entire paper has been briefly elaborated on the best uniqueness, reliability process and the proper "validity of the iris biometric validation system" for the actual purpose of the person identification.

I. INTRODUCTION

1.1. Introduction

The biometric process has been mainly used to recognize individual types of physical aspects and features. For this purpose, a tremendous amount of acknowledgement technologies have been generally provided with the actual fingerprint, iris procedures and voice acknowledgement. The biometric mainly deals with the proper technical and technological fields for the body controls and body dimensions. The authentication system is based on the appropriate biometric security system that has increased the actual importance within all countries. The used system has been shown the proper valid and best impressive performance based on all these procedures and aspects. For this purpose, the fingerprint is the only procedure for providing the proper security techniques to provide the true uniqueness and the strong privacy properties of the entire system. The exceptional fingerprint assurance or the proper kind of imprint approval has been mainly insinuating the automated methods and procedures to ensure similarity between the two people fingerprints. The

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Machine Learning Techniques for Cyber Security Detection

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ABSTRACT

Contrasted with the past, improvements in PC and correspondence innovations have given broad and propelled changes. The use of new innovations give incredible advantages to people, organizations, and governments, be that as it may, messes some up against them. For instance, the protection of significant data, security of put away information stages, accessibility of information and so forth. Contingent upon these issues, digital fear based oppression is one of the most significant issues in this day and age. Digital fear, which made a great deal of issues people and establishments, has arrived at a level that could undermine open and nation security by different gatherings, for example, criminal association, proficient people and digital activists. Along these lines, Intrusion Detection Systems (IDS) has been created to maintain a strategic distance from digital assaults. Right now, learning the bolster support vector machine (SVM) calculations were utilized to recognize port sweep endeavors dependent on the new CICIDS2017 dataset with 97.80%, 69.79% precision rates were accomplished individually. Rather than SVM we can introduce some other algorithms like random forest, CNN, ANN where these algorithms can acquire accuracies like SVM – 93.29, CNN – 63.52, Random Forest – 99.93, ANN – 99.11.

I. INTRODUCTION

Political and economic actors are increasingly using sophisticated cyber-warfare to disrupt, destroy, or suppress information content in computer networks. There is a requirement to assure network protocol resilience against incursions by powerful attackers who can even control a percentage of the network's parties. Both passive (eavesdropping, nonparticipation) and active (jamming, message dropping, corruption, and forging) assaults can be launched by the controlled parties. Intrusion detection is the system which continuously monitoring events in a computer system or network, analysing them for signals of potential problems, and, in many cases, preventing unwanted access. This is usually performed by automatically gathering data from a range of systems and network for potential security issues. Traditional intrusion detection and solutions, such as firewalls, access controlling mechanisms, and encryptions, have significant flaws when it comes to properly defending networks and systems against more complex assaults such as denial of service. Furthermore, most systems based on such methodologies have a high rate of false positive and false negative detection, as well as a lack of ability to react to changing harmful behaviour. Several Machine Learning (ML) approaches have, however, been applied to the challenge of intrusion detection in the last decade in the hopes of boosting detection rates and adaptability. These methods are frequently employed to maintain attack information bases current and thorough. Cyber-security and defence against a variety of cyber-attacks has recently become a hot topic. The fundamental reason for this is the phenomenal expansion of computer technology, a large number of

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Online Exam Student Anti-Cheat Tool

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ABSTRACT

The rapid growth of online education has necessitated the development of effective tools and strategies to mitigate cheating in online student exams. This abstract presents an overview of an online student exam anti-cheat tool designed to address the challenges associated with maintaining academic integrity in remote assessment environments.The proposed tool incorporates a combination of advanced technologies and innovative methodologies to detect and deter cheating behaviors during online exams. Key features include:

1. *Behavioral Monitoring: The tool utilizes machine learning algorithms to analyze students' behavior during exams, such as eye movement tracking, keyboard typing patterns, and mouse activity. Deviations from expected behavior patterns can be flagged as potential cheating indicators.*
2. *Proctoring Solutions: The tool integrates real-time video proctoring to monitor students during exams. Proctors can observe students remotely, verifying their identities, and ensuring adherence to exam rules and regulations. Automated proctoring features, including facial recognition and identification, can be employed to enhance efficiency.*
3. *Plagiarism Detection: To combat plagiarism, the tool incorporates advanced plagiarism detection algorithms that compare students' exam responses against a vast database of online resources, academic publications, and previous student submissions. Any instances of content similarity are identified and flagged for review.*
4. *Secure Browser Environment: A secure browser interface is implemented to prevent students from accessing unauthorized materials or websites during exams. The tool restricts navigation to external resources, disables copy-paste functions, and blocks other applications to maintain a controlled exam environment.*
5. *Data Analytics and Anomaly Detection: The tool employs data analytics techniques to identify abnormal exam patterns and trends. Statistical analysis of student performance, response times, and other relevant data can uncover suspicious activities that may indicate cheating.*
6. *Authentication Mechanisms: To ensure the integrity of exam takers' identities, the tool employs multi-factor authentication methods, such as password verification, IP address tracking, and device recognition. These mechanisms help prevent impersonation and unauthorized access.*

The proposed online student exam anti-cheat tool aims to provide educational institutions with a comprehensive solution for maintaining academic integrity in online assessment settings. By combining behavioral monitoring, proctoring solutions, plagiarism detection, secure browser environments, data analytics, and authentication mechanisms, the tool offers a robust defense against various cheating methods. Further research and development are required to refine the tool's effectiveness and address

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Online Food Order Application Using Django

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ABSTRACT

With the growing popularity of food delivery, conventional phone order has become inconvenient for both customers and food delivery stores. People are concerned about how to make food delivery more timely and convenient. As a result, this research investigates and creates new takeaway apps that are simpler and more object-oriented than existing apps. Food delivery should be timely, convenient, and comprehensive. Many food delivery systems exist today, but their functions are not comprehensive, and some do not meet the requirements of timely delivery, friendliness, payment is too simple, the layout is too rigid, and information updates are not timely enough. An Online Food Ordering System that simplifies the food ordering procedure is proposed here. The proposed system updates the menu with all available options, easing the customer's job. Customers can place orders for multiple items and check order details before logging out. The customer receives an order confirmation. The order is queued, updated in the database, and returned in real-time. This technology enables personnel to go over orders in real-time and process them efficiently and with few errors.

Keywords: *Online Food.*

I. INTRODUCTION

Nowadays, digital business platforms are very popular and save us much effort and time in our daily life. E-commerce companies such as Amazon and Ebay could deliver goods to customers very efficiently. On the one hand, customers could select goods and place orders online without visiting the shop, which is usually time-consuming. Besides, they do not need to carry the goods to home. Instead, the shop would deliver the goods and save customers' efforts. On the other hand, using digital business platforms could make it more convenient for shop owners to manage orders, collect and analyse data and provide better service. In the catering industry, the demand of combining the convenience of digital business with their traditional delivery service is increasingly growing. Unlike common e-commerce companies, the restaurants usually could deliver food in less than half an hour and actually saves customers' time when compared to visiting the restaurants.

In order to stand out in the digital business trend of catering industry and provide more satisfying service, we designed this Pizza Hot project. Customers usually expect fast delivery and food in good condition to eat. So in order to adapt to customers' expectation and earn more profits for restaurant owners, we improved the traditional digital business platform. In addition to the general functionalities of e-commerce platform, we developed a hardware system which is intended to be put in the delivery box. After the restaurant receives customers' orders and the dishes are ready to deliver, the delivery man put the portable system in the delivery box. The system could record the temperature in the box and the time of delivery. After the dishes arrives, it will calculate a suggested tip for customers based on temperature, time and distance the delivery man covered. If the food's temperature is suitable, the tips

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Plant Leaf Disease Detection using Deep Learning

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ABSTRACT:
Rapid human population growth requires corresponding increase in food production. Easily spreadable diseases can have a strong negative impact on leaf yields and even destroy whole crops. That is why early disease diagnosis and prevention are of very high importance. Traditional methods rely on lab analysis and human expertise which are usually expensive and unavailable in a large part of the undeveloped world. Since smartphones are becoming increasingly present even in the most rural areas, in recent years scientists have turned to automated image analysis as a way of identifying crop diseases.

I. INTRODUCTION

Human population steadily continues to grow, and along with it the need for food production increases. According to the UN projections [1], human population is expected to reach 9.7 billion in 2050, 2 billion more than today. Considering that most of the population growth is to occur in the least developed countries (around 80% increase in the next 30 years), where the food scarcity is the main problem, it is easy to conclude that minimizing food loss in those countries is a primary concern. It is estimated that the yield loss worldwide is between 20 and 40 percent [2], with many farms suffering a total loss.

Tomato and potato are a major commercial crop grown all over the world. It is sensitive to various illnesses, which reduces tomato and potato quality and yield while also causing significant economic losses. Tomato and potato grey leaf spot is a common disease that damages and kills the leaves of tomato and potato es, preventing them from growing and producing fruit. The infection that produces grey leaf spots on tomato and potato es is brutal to remove. Contact, invasion, latency, and onset are the four phases of infection for the pathogen that causes tomato and potato grey leaf spot. As a result, early preventative and control methods are suitable before a large-scale pandemic. Early disease detection can also aid in reducing pesticide usage and pollution, as well as the quality, safety, and health of tomato and potato es. Traditional disease detection systems cannot meet large-scale planting demands due to low diagnostic efficiency and fast disease transmission, and plants typically miss the appropriate management time [1, 2]. Manually detecting leaf disease with the naked eye needs a team of professionals and ongoing monitoring. When the farm is large, it is costly. As a result, image processing techniques may be used to automatically detect illnesses in leaves, saving time, money, and effort as compared to traditional methods. The early detection of illnesses in leaves improves crop productivity. Disease-affected leaves may be found at an early stage using image processing techniques like as segmentation, identification, and classification, and crop yield and quality can be improved. Many farmers lack the resources or understanding on how to contact specialists, which makes it more costly, time-consuming, and inaccurate. In this case, the suggested approach proved to be more advantageous in terms of crop observation. The technique is more accessible and less costly when plant illness is detected using leaf symptoms. It takes less time, effort, and precision to use an automated detection technique. Manually detecting leaf disease with the naked eye needs a team of professionals and ongoing monitoring. When the farm is large, it is costly. As a result, image processing techniques may be used to automatically detect illnesses in leaves, saving time, money, and effort as compared to traditional methods. The early detection of illnesses in

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Smart Home Interior Design for Accomplished Features Using Image Processing

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ABSTRACT:

It's difficult to decorate your home with the right things. Our goal is to create an Android app that will take a picture of the user's bedroom and allow them to visualise it with various interior design elements, such as wall paint, carpeting, and curtains. Applications that imitate a furniture arrangement frequently take advantage of augmented reality. We'll talk about an augmented reality system for home displays that leverages fast corner detection and provides real-time tracking without identification markerse.Though generally limited to a 2D tablet or phone interface, such systems frequently demand users to physically and regularly alter their viewpoint of the real world, which necessitates human manipulation of the same. We have created a system that automatically determines the best view point to enhance comprehension of the room layout overall and makes it simple for the user to change the view point in order to help solve this issue.

Key Words: Augmented reality, interior design.

INTRODUCTION:

Incorporating computer-generated sensory input including music, video, graphics, or GPS data, augmented reality (AR) is a live, direct or indirect depiction of a physical, real-world environment whose elements are improved (or supplemented). It is associated with the more general idea of reality when a computer alters (perhaps even lessens rather than augments) the perception of reality. Technology thus enhances the way that people now perceive reality. The elements of the digital world are revealed in our perception of the real world thanks to augmented reality. As an end-user application (for a customer looking to buy furniture), this effort on the use of augmented reality for home furnishings could be quite beneficial. It provides furniture models in 3-D animation as well as instructions that are connected to the job domain. A popular field of research in recent years, augmented reality (AR) exploits innovation to bring together the physical and digital realms. AR incorporates digital objects into the real scene while offering users the feeling of realistic immersion because it is based on computer graphics and related techniques for image processing. AR focuses more emphasis on transferring the real scene to the virtual world that Virtual Reality (VR) would. The user experiences the digital image as if it resembled an authentic scenario given that it selects a real-world scene and adds an imaginary thing to it. In AR technology, marker systems and markerless systems are the two methods for connecting virtual and physical objects.

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Symmetric-Key Based Verification of Keyword Search Over Dynamic Encrypted Cloud Data

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ABSTRACT

Searchable and Verifiable As a crucial method of cloud security, symmetric encryption enables users to search for encrypted data in the cloud using keywords and validate the accuracy of the results. One of the most prevalent and important requirements for data owners in such schemes is dynamic update for cloud data. To our knowledge, all of the verifiable SSE systems that permit data dynamic update currently in use are based on asymmetric-key cryptography verification, which necessitates time-consuming processes. The sheer volume of cloud data could make the overhead of verification a major burden. Consequently, a crucial unsolved topic is how to implement keyword search over dynamic encrypted cloud data with effective verification. In this research, we investigate how to accomplish keyword search over dynamically encrypted cloud data with symmetric-key based verification and suggest a workable technique. In order to support the efficient verification of dynamic data, we design a novel Accumulative Authentication Tag (AAT) based on the symmetric-key cryptography to generate an authentication tag for each keyword. Benefiting from the accumulation property of our designed AAT, the authentication tag can be conveniently updated when dynamic operations on cloud data occur. In order to achieve efficient data update, we design a new secure index composed by a search table ST based on the orthogonal list and a verification list VL containing AATs. Owing to the connectivity and the flexibility of ST, the update efficiency can be significantly improved. The security analysis and the performance evaluation results show that the proposed scheme is secure and efficient

KEYWORDS: *cloud computing, encryption*

I. INTRODUCTION

Searchable and Verifiable As a crucial method of cloud security, symmetric encryption enables users to search for encrypted data in the cloud using keywords and validate the accuracy of the results. One of the most prevalent and important requirements for data owners in such schemes is dynamic update for cloud data. To our knowledge, all of the verifiable SSE systems that permit data dynamic update currently in use are based on asymmetric-key cryptography verification, which necessitates time-consuming processes. The overhead of verification may become a significant burden due to the sheer amount of cloud data. Therefore, how to achieve keyword search over dynamic encrypted cloud data with efficient verification is a critical unsolved problem. To address this problem, we achieving keyword search over dynamic encrypted cloud data with symmetric-key based verification and propose a practical scheme in this paper. In order to support the efficient verification of dynamic data, we design a novel Accumulative Authentication Tag (AAT) based on

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The Design of Intelligence Logistics System Based on Internet of Things

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ABSTRACT:

In the era of Internet of things and data analytics this paper has proposed system architecture for RFID based shipment tracking using Arduino equipped with RFID module. The logistics is an important subset of supply chain management and plays a vital role for any organization. In this paper IoT based smart logistic system for various food grain and pharmaceutical industries is designed. To ensure security of the transported goods the containers are equipped with rfid in order to detect any form of theft activities. By adapting this smart logistic system achieves live monitoring of goods from shipment to customer place at lower cost of investment. The sensor devices are connected through the internet and real time data transfer will provide an opportunity for the organization to react immediately if any changes required in the logistic process.

I. INTRODUCTION

At present, many logistics service enterprises are still in the traditional, simple service, consider the logistics management as transportation, warehousing, distribution and processing separate part, independently managed. Many logistics enterprise informatization level is low, could not provide information sharing for customers, so that companies have been slow to respond, inefficient [1]. The development of the Internet of things technology is driving the change of Chinese wisdom logistics. RFID technology, ZigBee technology gained popularity, so that the interconnection of things can be achieved, will give enterprise logistics systems, such as environment monitoring systems provide a platform [2,3]. On this basis, this paper introduces the design of intelligent logistics system based on Internet of things. The system can real-time monitoring goods information and environmental security, reduce the dependence on staff.

In IOT application services through sharing the same huge cloud computing resource pool to obtain large system throughput capacity to meet user needs in some cases of ultra high computation or storage resource request, and the cost is the total amount of use of resources costs [1]. Dynamic expansion and contraction process of the above system does not require user intervention, the system will automatically, developers on its platform but according to the standard and follow the procedure is easy to be extended principle, with not much difference between the development of local application, the system developers and users have brought a lot of benefits, and the operator can also be middleware services the core link control firmly. The work principle of RFID is: label into the field, if the received reader special RF signals, can with the induced current obtained by the energy sending out the product information stored in the chips (i.e. Passive Tag, passive tags or passive tags), or take the initiative to send signals to send a frequency (i.e. Active Tag, active tags or active tags), the reader reads information and decoded, sent to the central information system on the data processing. Intelligent logistics system is mainly to achieve the following two objectives: To carry on the business process reengineering of logistics enterprise itself (Business Process Re-Engineering, BPR), the traditional logistics enterprise management and business process has been changed fundamentally, so that it can survive in the information society. In the EC operating environment, providing value-added logistics services have not provide for the customer, the value-added logistics services will enhance the convenience of logistics services, to accelerate the reaction speed and reduce the service cost, extended enterprises downstream in the supply chain of the business. Using the technology of RFID network in the world all items together, can be "communication between each other and articles". RFID tags are stored in the items of information, the reader information obtained through wireless data communication network automatic acquisition to the central information system, to realize the goods identification; through the computer network to realize the sharing and exchange of information. That is to say the world through RFID and other information sensing did not have connected to the Internet, and eventually realize intelligent identification and management. The Internet of things

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Smart Farming Wifi Based Agriculture System

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ABSTRACT:
In the world of digital era, an advance development with internet of things (IoT) were initiated, where devices communicate with each other and the process are automated and controlled with the help of internet. An IoT in an agriculture framework includes various benefits in managing and monitoring the crops. In this paper, an architectural framework is developed which integrates the internet of things (IoT) with the production of crops, different measures and methods are used to monitor crops using cloud computing. The approach provides real-time analysis of data collected from sensors placed in crops and produces result to farmer which is necessary for the monitoring the crop growth which reduces the time, energy of the farmer.The data collected from the fields are stored in the cloud and processed in order to facilitate automation by integrating IoT devices. The concept presented in the paper could increase the productivity of the crops by reducing wastage of resources utilized in the agriculture fields. The results of the experimentation carried out presents the details of temperature, soil moisture, humidity and water usage for the field and performs decision making analysis with the interaction of the farmer.

I. INTRODUCTION

1.1 INTRODUCTION

Agriculture plays a very important role where economic growth of a country like India is considered. In a scenario crop yield rate is falling consistently, there is a need of smart system which can solve the problem of decreasing crop yield. For farmers, it's such a complex when there is more than one crop to grow especially when the market prices are unknown to them. Citing the Wikipedia statistics, the farmer suicide rate in India has ranged between 1.4and 1.8 per 100000 total population, over a 10-year period through 2005. While 2014 saw 5650 farmer suicides, the figure crossed 8000 in 2015. Therefore, to eliminate this problem, we propose a system which will provide crop selection based on economic, environmental and yield rate to reap the maximum yield out of it for the farmers which will sequentially help meet the elevating demands for the food supplies in the country.

As the world is trending towards new technologies and implementations it is a necessary goal to trend up in agriculture too. Many researches are done in the field of agriculture and most of them signify the use of wireless sensor network that collect data from different sensors deployed at various nodes and send it through the wireless protocol. The collected data provide the information about the various environmental factors. Monitoring the environmental factors is not the complete solution to increase the yield of crops. There are number of other factors that decrease the productivity. Hence, automation must be implemented in agriculture to overcome these problems.

In order to provide solution to such problems, it is necessary to develop an integrated system which wills improve productivity in every stage. But, complete automation in agriculture is not achieved due to various issues. Though it is implemented in the research level, it is not given to the farmers as a product to get benefitted from the resources. Agriculture is considered as the basis of life for the human species as it is the main source of food grains and other raw materials. It plays vital role in the growth of country's economy. It also provides large ample employment opportunities to the people. Growth in agricultural sector is necessary for the development of economic condition of the country. Unfortunately, many farmers still use the traditional methods of farming which results in low yielding of crops and fruits. But wherever automation had been implemented and human beings had been replaced by automatic machineries, the yield has been improved. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield.

Most of the papers signifies the use of wireless sensor network which collects the data from different types of sensors and then send it to main server using wireless protocol. The collected data provides the information about different environmental factors which in turns helps to monitor the system. Monitoring environmental factors is not enough and complete solution to improve the yield of the crops. There are number of other factors that affect the

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RFID Based Smart System for Storing Data

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ABSTRACT

The main functionality of this project is to access the passport details of a passport holderthrough RFID technology. For this purpose the authorized person is given an RFID card. This card contains an integrated circuit that is used for storing, processing information through modulating and demodulating of the radio frequency signal that is being transmitted. Thus, the data stored in this card is referred as the passport details of the person.
Passport verification and checking is a very time consuming process. This proposed system simplifies the process by giving the authorized person an RFID tag containing all the passport details like name, passport number and nationality etc. Once, the person places the cardin front of the RFID card reader, it reads the data and verifies it with that data present in the system and if it matches then it displays the details of the passport holder. Here we use microcontroller from 8051 family. For display a 16X2 LCD is used. The status also can be retrieved from this system by pressing the status button interfaced to a microcontroller.
Further the project can be enhanced by using finger printer module. This overcomes the drawbacks of RFID and provides high level of security in the system.

I.INTRODUCTION

1.1 Introduction

RFID (radio frequency identification) is a form of Wireless communication that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum to uniquely identify an object, animal or person. Every RFID system consists of three components: a scanning antenna, a transciever and a transponder. When the scanning antenna and transceiver are combined, they are referred to as an RFID reader or interrogator.
There are two types of RFID readers -- fixed readers and mobile readers. The RFID reader is a network-connected device that can be portable or permanently attached. It uses radio waves to transmit signals that activate the tag. Once activated, the tag sends a wave back to the antenna, where it is translated into data.
The transponder is in the RFID tag itself. The read range for RFID tags varies based on factors including the type of tag, type of reader, RFID frequency and interference in the surrounding environment or from other RFID tags and readers. Tags that have a stronger power source also have a longer read range.
Micro-controller works according to the program written in it. The program is written in such a way, so that the Microcontroller can read and it can store the information received from the parameter outputs.According to the received information, the Microcontroller generates digitalized information and this digitalized information is fed to the LCD panel.

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IOT Prison Break Monitoring and Alerting System

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ABSTRACT:

We have surveillance systems for protection of public places such as banks, shopping malls, homes, etc. from robbers, and other negative people. People are well acquainted with current security systems of the Indian jails. There are some system like CCTVs, drones and guards are used to monitor the activities of the jail, But as these security systems are not sufficient to monitor all such criminal activity and surely ensure that there is no such chance of the escaping of these prisoners from the prison. There are also many problems associated with the modern security systems, Some of them which are detected issues with these CCTVs are that: not having proper clear images at night, unsaturated camera footage, disturbing videos, visible horizontal lines on videos, no video signal is available sometime, recording system is not their by DVR, starting some false alarms with not proper cause, bright spots on the monitor, etc. By These troubles there are the situation that can be created in the jails where prisoner can get a chance to flee as well as can cause any unexpected activities inside the jail, also deployment of these techniques is quite costlier. Because of this all issue it shows that there is a demand of proper secure security system, that is under budget to use and can provide satisfactory surveillance security solution to the Indian jails also to the society. Many systems are introduced before have to fulfill this demand that generally use equipment such as Iot , Bluetooth, GSM, GPS but these systems are not steady and can be affected by cyber-attacks, which will be the issue of the safety. Now we cameup with this project with an idea to design an advanced and reliable , safe fix for this problem of this situation. Motive behind our device is to implement an safe and monitored environment in the prison that supervise the motion of the prisoners and the outsiders and overcome the problem present with the security modules available in the market previously.

I.INTRODUCTION

Project's main aim is detect movement or status of behavior of prisoner's inside prison , whether they are in the premise area or not ,or their any unusual activity is affecting safety of prison or not . For this purpose, Geofencing has been done and to fail the idea of escaping , laser is used . This Project is based on Prison Security and Safety devices that are made by using Wi-Fi, Bluetooth for Internet as communication mode, GPS and GSM for SMS as communication mode for communication between higher authority and prison alert system. They have particular restriction on each of them.

Wi-Fi and Bluetooth devices have a limited to transmit signal and communicate with each other. Also prison's are present at different -different location, like that of village area, or highly populated dense area, having multistory building that causes Poor internet connectivity which will decrease it's efficiency. Organization of the Project: While working on Project is the literature survey has been done to know about their pros and cons in the market. And further we have seen the functioning of these currently available system . After knowing the currently available system it will clarifies the points that should be examined to design an efficient setup, after which we will work on it.

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Automatic Traffic E Challan Generation using Deep learning

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ABSTRACT:

People's careless and reckless attitudes are causing a severe issue with traffic law infractions, which is weakening society's moral foundation. The human aspect in our existing system continues to be a burden and yields subpar outcomes when it might have produced far better results, despite the fact that our country's traffic rules have significantly improved over the previous several years. The evolution of technology has ushered in a new era of intelligent urban mobility management. Our project aimed to develop a system which is cost efficient and accurate in detecting the vehicles which violate the traffic laws and regulations made by Indian government. Deploying Convolution Neural Network (CNN) model in Raspberry pi4 board to perform real time image processing operations and with the integration of Canny Edge Detection (CED) which enhances the system accuracy by removing noise and delineating vehicle boundaries in even blurred images. The output image of CED algorithm is sent to Optical Character Recognition (OCR) to extract the number plate using OpenCV library.

Finally Global System for Mobile Communication (GSM) module springs into action issuing instant Short Message Service (SMS) notification to authorities for prompt E Challan generation. The proposed system is able to achieve 96% accuracy rate to detect the license number plate.

Keywords-*Deep Learning, Convolutional Neural Network, Raspberry pi4, Canny Edge Detection Algorithm, GSM Module, Camera, Python.*

1. INTRODUCTION

Despite the significant automation in detection and issue of challans in respect of speed and signal breaches utilising radars and back end technologies being deployed in industrialised nations, detecting and monitoring traffic offences has been a tough procedure [1]. If one considers infractions of other traffic regulations, such as improper packaging, failure to wear a safety belt or helmet, failure to carry required documentation, etc., there is still room for improvement in the automation of the corresponding administrative tasks and the issue of corresponding challans. There are a lot of cars on the road in India, so it's not easy to spot those who break the rules. It's also a lot of work for the traffic police to manage everything from tickets to accidents to even their own department's irregularities. The number plate itself is vulnerable to manipulation in the event of automated infractions that are often monitored by the plates. In order to identify the vehicle, this research provided a method for the issuance and settlement of challans that uses the chassis number. In order to decrease the likelihood of corruption in compliance, a target has also been set for the number of vehicles that the traffic police will scan, along with a bonus scheme for superior performance. There are 17 digits in a Vehicle Identification Number . The notation for numbers was first introduced in 1977 in ISO Standard 3779 and amended in 1983. The Vehicle Identification Number (VIN), sometimes known as the chassis number, is a unique number that appears on every single car that has ever been produced. The chassis number of a car cannot be changed, unlike the number on the number plate. The chassis number may be found on the vehicle's body frame or next to the engine, depending on the type and manufacturer. The firewall separates the passenger area from the engine compartment. Almost often, the VIN is either stamped or printed in the middle, at the top of the firewall, in the same colour as the paintwork. In contrast to VIN, licence plates may be altered or purposefully modified in fraud situations using a stolen plate, for instance, however, the