ANN BASED D-FACTS FOR POWER QUALITY ENHANCEMENT IN MICROGRID

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Abstract:

This paper proposes the concept of D-STATCOM and adaptive switched filter compensator to mitigate the power quality problems in distributed system. The key parameters for power quality measurements are voltage distortions such as sag & swell, current harmonics caused by different load conditions. A conventional PID controller is used for regulating the dc link voltages of D-FACTS and ASFC controllers to compensate the power quality problems. The parameter tuning of PID controller is the major criteria. A grasshopper optimization is implemented for tuning of PID controller. The GOA based PID controller compensate the 80% of harmonic distortions and voltage distortions. To improve the harmonic distortions and compensate voltage distortions, the dc link voltage can be regulated with ANN controller.

INTRODUCTION

In the advancement of power semiconductor devices, such as thyristors, Gate Turn off thyristors, Insulated Gate Bipolar Transistors and many more devices, which are used to control electric power.

In three phase systems, the power electronics devices could also cause unbalances in voltage and draw excessive neutral currents due to their disturbances. Due to because of these injected harmonics, reactive power burden, unbalance, and excessive neutral currents causes efficiency reduction and poor power factor. Therefore, improvement of power quality is one of the important issue since many loads at various distribution ends. Basically, the term Power Quality mainly deals with problems occurred in the system like improvement of voltage levels at the Point of Common Coupling (PCC) for various distribution voltage levels irrespective of voltage fluctuations, maintaining near unity power factor power drawn from the supply, blocking of voltage and current unbalance from passing upwards from various distribution levels, reduction of voltage and current harmonics in the system and suppression of excessive supply neutral current. Conventionally, passive LC filters has been used but these devices have the demerits of fixed compensation, large size, ageing and resonance. Nowadays these constraints cannot be overcome otherwise, while maintaining the required system stability, by mechanical means without lowering the useable transmission capacity. By providing added flexibility, FACTS controller can enable a line to carry power closer to its thermal rating. Mechanical switching needs to be supplemented by rapid-response power electronics 13]. The facts technology can certainly be used to overcome any to the stability limits, in which case the ultimate limits would be thermal and dielectric.

PROPOSED SYSTEM:

The proposed MG includes solar PV, WES, BESS and PEMFC. Each of these resources is connected to its LC, which in turn is connected to the MGCC. The MGCC can be connected to the host (or utility) grid through the distribution system operator (DSO) if it is desired or needed. The LC encompasses a breaker for switching operation of its connected resource and maximum power point tracking (MPPT) circuit. DER-bus is connected to the load-bus at 380V, 50 Hz. Fig. 1 shows the isolated MG with a control system structure including the power quality enhancement device (PQED) at the PCC.

POWER MANAGEMENT SCHEME FOR PV BASED MICROGRID USING MPPT CONTROLLER

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Abstract:

Since the potential benefits are resulting from the use of renewable energy sources, Microgrid and Distributed Generation (DG) are becoming a significant research area. Microgrid can generally be composed of renewable microsources placed close to the load Centre. In order to have control over the real and reactive power of individual DG, Voltage-Frequency control, Power management strategy is required in microgrid. This project presents an investigation about the impact of integrating renewable energy based generation sources on the existing distribution system in terms of load sharing. This project presents genetic algorithm (GA) based maximum power point tracking (MPPT) for photovoltaic (PV) array integrated with battery storage unit (BSU) as power generation unit in standalone mode. PV generation depends on solar irradiance, site location and environmental factors like temperature. Thus output of PV output is fluctuating in nature and the addition of nonlinear load make the situation more critical. PSO based MPPT for PV generation works for local optimal solution. DC/DC and boost converter has been used to obtain rated desired rated voltage. And PI controller is used to maintain the DC-link voltage constant and close to its reference value under different conditions. Simulation results under different environmental and operating conditions are shown.

Introduction:

At present, most of energy demand in the world relies on fossil fuels such as petroleum, coal, and natural gas that are being exhausted very fast. One of the major severe problems of global warming is one of these fuels combustion products, carbon dioxide; these are resulting in great danger for life on our planet [1].

Among all the available Renewable energy sources, PV array systems are trusted to play a significant role in prospective energy production. PV systems transform photon energy into electrical energy. These energy systems generate low voltage output, thus, high step-up dc/dc converters are employed in many applications, including fuel cells, wind power, and photovoltaic systems, which converts low voltage into high voltage. Due to the increasing demand on electricity, and limited availability and high prices of non-renewable sources, the photovoltaic (PV) energy conversion system has becomes an alternative as it is freely available, pollution free, and has less operation al and low maintenance cost. Therefore, the utilization of PV energy systems has to be increased for standalone and as well as grid-connected modes of PV systems. Photovoltaic (PV) as a renewable energy resource naturally is not stable by location, time, season and weather and its installation cost is comparatively high. An important consideration in increasing the efficiency of PV systems is to operate the system near maximum power point (MPP) so to obtain the approximately maximum power of PV array. For getting maximum possible energy produced by a solar system.

Also maximum power point tracking (MPPT) techniques are used for improving the performance of PV systems, a high efficiency power converter which is designed to extract maximum power from a PV panel is usually considered. Generally, there will be a unique point on the V -I curve, called the Maximum Power Point (MPP), at which the whole PV system serves with maximum efficiency and produces its maximum power output [l5-17]. The position of the MPP is unknown, but can be placed

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POWER QUALITY IMPROVEMENT IN DFIG BASED MICROGRID USING ANN CONTROLLER

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Abstract:

This paper presents the power quality analysis of microgrid. The Hybrid system is a combination of PV, DFIG-Wind and Battery systems. Here, three various system of micro-grid are taken namely, PV-Battery system, DFIG system, Hybrid system to show the importance of DFIG and its in-built converters. The DFIG is a set of Grid and Rotor side converters. All the three systems are to be model and simulate in Matlab. The Grid Side Converter (GSC) of DFIG also utilized as inverter of PV System which reduces the cost of one converter also improves the power quality and harmonic distortions. To improve the power quality of proposed grid side converter is to be implement with ANN controller.

Introduction:

In the present scenario, maximum utilization of energy demand in the world is based on fossil fuels such as coal, natural gas and petroleum products. But, in this one of the major disadvantage from these products are global warming, and these result in great danger for life on the planet [1].

The alternative solution for this fossil fuels are utilization of renewable energy sources. The power generated by a wind energy system is depends on the climate conditions; for example, if in case of rainy or in case of cloudy conditions, it is not possible to meet the energy demand [2]. For flexible and reliable operation of the system, the best solution is to integrate the wind generation system with other renewable sources such as solar, electrolyzer, fuel cell or in some cases grid interconnection.

The capability of fuel cell power generation system, wind energy generation system and photovoltaic based hybrid system can be to overcome the inconvenience caused by the grid power system. Hence, in this paper the coordination of FC, Solar and wind generation system is considered for eliminating the fluctuations [3].

This simulation model is performed using Matlab and SimPower Systems and results are presented to verify the effectiveness of the proposed system [4]-[5]. The proposed grid connected hybrid energy generation system is shown in figure 1.

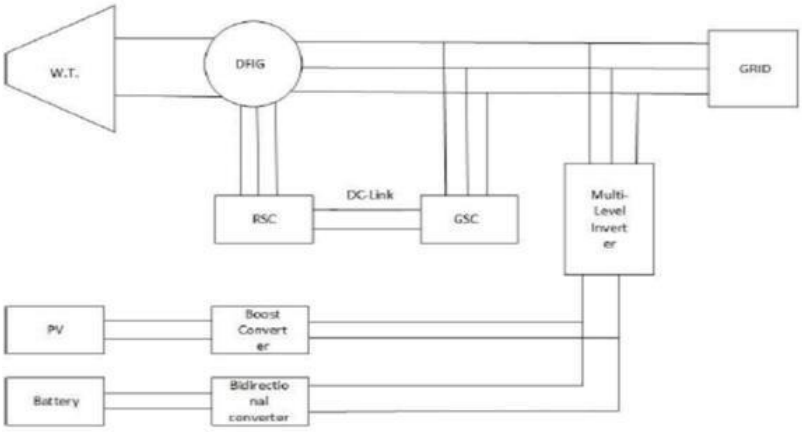

Fig 1: Configuration of proposed grid connected hybrid system

FLC Based Performance Analysis of High-Voltage Gain DC-DC Converter for Induction Motor Drive

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ABSTRACT

New High-Step-Up DC-DC Converter has been used and powered by solar-PV system for induction motor drive application. The provided topology includes a boost converter using coupled inductors to increase the voltage gain. This converter uses hybrid switched inductor technique to enhance its overall voltage gain. The inductors of the gain extension network are all charged together in parallel and get discharged simultaneously in series to obtain the high voltage gain (>10). Resultantly, the voltage stress experienced by the switches of the proposed converter is reduced to 55% of the desired output voltage. The main characterization of Fuzzy-Logic Control (FLC) scheme is constituted by emblematic path along with knowledge proficiency for prediction of optimal switching states to proposed high-step up DC-DC converter. The main intension of the FL controller is used to regulate the sudden disturbances coming from the load and getting enhanced performance over the formal PI controller. The main objective of this work is proposing a novel dual switch high step-up DC- DC converter fed VSI based induction motor (I.M) drive is controlled and powered by solar PV system with intelligent control schemes. The well-recognition of proposed scheme is validated under constant and variable DC-link voltage conditions by using intelligent Fuzzy-logic controller which is demonstrated through Matlab/Simulink tool and results are conferred with proper comparisons.

Keyword: - *DC-DC Converter, Fuzzy-Logic Controller, High Voltage Gain, Induction Motor Drive*

1. INTRODUCTION

Due to the increasing need for the electrical energy and due to the depletion of conventional sources of energy along with the rising cost of those, renewable energy resources are getting more importance. When solar energy is considered, electricity production from it, is very eco-friendly and available in plenty in nature [1]. The high cost of PV panels and its low efficiency limited its use earlier but with the increase in technology. The efficiency of solar cells are also getting increased which encourages the use of PV system in present days to drive the electric motor drive applications like adjustable speed drives [2]-[5].

The DC-DC converters plays a key role in drive applications, in that boost converter is highly preferred for transforming low-level Photo-Voltaic (PV) voltage into high-level DC-link voltage. Numerous DC-DC converters are proposed to meet the high voltage gain (>10) requirement. Isolated converter topologies proposed to provide the required voltage gain by varying the turns ratio of the transformers. The transformers' leakage inductance causes high voltage spikes on semiconductor devices. Compared to isolated DC-DC converters, non-isolated high step-up converters are more efficient and smaller in size employing one or more coupled inductors (CIs) with appropriate turns ratio is indeed an option to obtain a high gain non-isolated converter [6]-[9].

However, similar to transformer based converters, CI based converters too suffer from the drawbacks caused due to the leakage inductance. Switched inductor (SI) and switched capacitor (SC) based converters are another breed of high gain converters. By including many SI (or SC) cells and repeating the charging and discharging operations, the voltage level at the output is significantly enhanced. A hybrid combination of SI and SC gain extension techniques is used to synthesize a high gain converter. The converter presented offers an excellent voltage gain of 6 with low voltage stress across the switches. However, the switches are operated at extreme duty ratio

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MODELING AND CONTROL OF SVM BASED MULTIPORT CONVERTER FOR PV BASED EV CHARGING STATION

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ABSTRACT:

As an environmental friendly vehicle, the increasing number of electrical vehicles (EVs) leads to a pressing need of widely distributed charging stations, especially due to the limited on-board battery capacity. However, fast charging stations, especially super-fast charging stations may stress power grid with potential overload at peaking time, sudden power gap and voltage sag. This project discusses the implementation and modeling of space vector modulation to multiport converter based EV charging station integrated with PV power generation, and battery energy storage system. In this paper, the control scheme and combination of PV power generation, EV charging station, and battery energy storage (BES) provides improved stabilization including power gap balancing, peak shaving and valley filling, and voltage sag compensation. As a result, the influence on power grid is reduced due to the matching between daily charging demand and adequate daytime PV generation. Simulation results are presented to confirm the benefits at different modes of this proposed multiport EV charging circuits with the PV-BES configuration with SVM technique. Furthermore, SiC devices are employed to the EV charging station to further improve the efficiency.

INTRODUCTION

The continuous rise in gasoline prices along with the increased concerns about the pollutions produced by fossil fuel engines are forcing the current vehicle market to find new alternatives to reduce the fossil fuel usage. Along with the research on bio-fuel driven engines; different electric vehicles and hybrid electric vehicles are evolving as viable alternatives to replace, or at least reduce, the current fleet of fossil fuel driven vehicles. Although current manufactured electric/hybrid vehicles are being marketed as a way to reduce fossil fuel usage, several promising technologies are being demonstrated that can utilize power electronics to charge the battery from the utility using plug-in vehicles or act as a distributed resource to send power back to the utility with vehicle-to-grid capabilities. In this paper, different plug-in vehicle topologies are described to review the power electronics required for them. The newly evolving V2G technology is also discussed along with economics and compliance requirements to allow the vehicle to be connected to the grid. Before going into the details of power electronics required for the electric/hybrid vehicles, the common forms of these vehicles are described next to get accustomed with the terminologies.

Literature View:

Singaravelan and Kowsalya [1] presented fuzzy controller for voltage-frequency control scheme for microgrid in islanding operation. The proposed scheme of fuzzy based voltage-power/frequency-active power (VP/FQ) sets the real power output to regulate the microgrid voltage and the reactive power output to regulate the frequency. This supervisory control scheme allows the voltage source converter (VSC) with standard inductor interface and dqframe current control in islanding mode in the instantaneous synchronization operation. The results demonstrate that the proposed approach perfume well and has a significance for the control of inverters in microgrid. A high-frequency photovoltaic pulse charger for lead-acid battery guided by a power-increment-aided incremental-conductance maximum power point tracking was proposed by Hung-I Hsieh et al [2]. The PV-PC implemented by a boost current converter is to eliminate sulphating crystallization on the electrode plates of the LAB and to prolong the battery life. The BCC associated with the PV module

Power Quality Enhancement Using Hybrid Power Filter

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ABSTRACT

Modern power electronics devices like active power filter and comprehensive simulation study of relay give the idea of power quality improvement. Generally, in electrical parallel circuits voltage is constant and current is variable parameter, so by using parallel active filter provided variable currents in system and mainly series active filters are used for voltage and power quality improvement and reducing the harmonic content in load voltage. In this paper, FFT analysis is done with help of series active power filter. The results show that proper tune active power filter provides best outputs for the imaginary power compensation and power factor developments. Additionally, the proposed series active filter is used for compensating voltage sag, voltage swell and voltage unbalanced issues in a three-phase distribution system without use of additional devices. The performance of proposed series-active power filter is verified under various voltage related PQ issues by using Matlab-Simulink tool, results are presented.

Keyword: *Power Quality, Passive Filters, Voltage Harmonics, Non-Linear load, Voltage Sag, Voltage Swell, Voltage Unbalance, Total-Harmonic Distortions.*

1. INTRODUCTION

One of the main responsibilities of a utility system is to supply electric power in the form of sinusoidal and currents with appropriate magnitudes and frequency for the customers at the points of common coupling (PCC). Although the generated voltage of synchronous machines in power plants are nearly sinusoidal ,some undesired conditions such as lightning and short circuit faults and nonlinear loads cause steady state error or transient voltages and current disturbances. For example, electric arc furnaces cause voltage fluctuations, power electronic converters generate current harmonics and distort voltage waveforms, and short circuits faults result in voltage sags and swells [1].

The above-mentioned issues are alleviated by using many ways such as passive and active compensation schemes developed as filtering techniques which includes passive filters and active filters. Passive filters with low circuit arrangement can mitigate harmonics. But passive filters can fix only fixed harmonics for which the particular passive filter is tuned leaving out remaining harmonics in the system. Also as order of harmonics is low, size of the passive filter increases as passive filter parameters are inversely proportional to tuned frequency [2]. On other-hand, Series Active Power Filter (SAPF) injects a voltage component which is connected in series with the supply voltage, thus compensating the voltage harmonics, voltage sags and swells on the load side. The main function of a Series-APF is the protection of sensitive loads from harmonics; short-circuit faults, voltage sags/swells coming from the network.

It mitigates the voltage-related issues like voltage sag-swell, voltage interruptions, and voltage harmonics, etc., in any power system network. It sustains the load-voltage as constant at a defined magnitude and phase quantities attained at PCC point. So as to compensate voltage related issues, Series-APF administers the respective voltage with a suitable phase and magnitude in series with the network/line. Generally, Series-APF neither delivers nor absorbs active power in stand-by mode. Whenever voltage sag and/or voltage swell happens in the network, SAPF provides active power to affected network as delivering/absorbing predominantly to/from battery energy source or DC-link source [3].

Typically, SAPF can be opted for low and/or medium voltage ranges, as well as it is developed as 3-phase 3-wire and 4-wire systems and single phase systems. As usual, the SAPF power-circuitry comprised of DC-AC inverter, DC-link/battery energy source, LC filter units and injection transformer. During voltage sag-swell and/or voltage harmonics, SAPF provides required load power to PCC/load for optimal compensation through DC-link

ANN BASED POWER QUALITY ENHANCEMENT OF GRID CONNECTED SOLAR PV SYSTEM USING LCL FILTER

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Abstract

Grid-connected photovoltaic (PV) systems are increasingly attracting the attention of industry and academia as a means of providing an alternative to conventional fossil-fuel generation and pollution-free power. This project aims to improve the power quality level of a grid-tied PV distribution system using shunt active power filter (APF) along with adaptive current control technique.

In this work Artificial Neural Network controller used to destroy the voltage and current harmonics in a grid-tied PV system. A reference current generation strategy is implemented to mitigate the current harmonics by extracting the fundamental constituents (FCs) from the nonlinear load currents. MCCF is employed to separate the FC from the distorted grid voltages and eliminates the voltage harmonics during extremely polluted grid voltage condition. The comparative analysis is analyzed to check the effectiveness of the proposed hybrid control scheme with existing and adaptive control techniques in respect of power quality, better dc offset rejection, better FC and frequency extraction, and grid synchronization.

Key Words:- Photovoltaic System, P & O MPPT, Boost Converter, LCL Filter, and Grid Connection.

1. INTRODUCTION

At present, most of energy demand in the world relies on fossil fuels such as petroleum, coal, and natural gas that are being exhausted very fast. One of the major severe problems of global warming is one of these fuels combustion products, carbon dioxide; these are resulting in great danger for life on our planet [1].

Among all the available Renewable energy sources, PV array systems are trusted to play a significant role in prospective energy production. PV systems transform photon energy into electrical energy. These energy systems generate low voltage output, thus, high step-up dc/dc converters are employed in many applications, including fuel cells, wind power, and photovoltaic systems, which converts low voltage into high voltage. Due to the increasing demand on electricity, and limited availability and high prices of non-renewable sources, the photovoltaic (PV) energy conversion system has becomes an alternative as it is freely available, pollution free, and has less operation al and low maintenance cost. Therefore, the utilization of PV energy systems has to be increased for standalone and as well as grid-connected modes of PV systems. Photovoltaic (PV) as a renewable energy resource naturally is not stable by location, time, season and weather and its installation cost is comparatively high. An important consideration in increasing the efficiency of PV systems is to operate the system near maximum power point (MPP) so to obtain the approximately maximum power of PV array. For getting maximum possible energy produced by a solar system.

Also maximum power point tracking (MPPT) techniques are used for improving the performance of PV systems, a high efficiency power converter which is designed to extract maximum power from a PV panel is usually considered. Generally, there will be a unique point on the V -I curve, called the Maximum Power Point (MPP), at which the whole PV system serves with maximum efficiency and produces its maximum power output [l5-17]. The position of the MPP is unknown, but can be placed either by search algorithms or through calculation models. Maximum Power Point Tracking Techniques (MPPT) are used to maintain the PV array's operating point at the precise position where maximum power can be delivered. Various MPPT algorithms have been considered in the literature; some of them are the Perturb and Observe (P&O) method [2-5], the Incremental Conductance (lC) method [2-6], the Artificial Neural Network method [7], the Fuzzy

A NEW TOPOLOGY FOR REACTIVE POWER COMPEN SATION IN GRID CONNECTED PV SYSTEM

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Abstract:

Grid tied solar inverters are designed to generate power at unity power factor which means that they have capability to produce active power only. The reactive power requirement of the load is catered by grid only. With the suddenly increase in the deployment of renewable based Distributed Energy Resources, reactive power drawn from the grid as compared to active power has increased considerably. This affects the power quality of the grid. If the grid tied solar inverter is made smart in terms of supplying reactive power in addition to active power and reactive power requirement from the grid will reduce as the grid has to supply lesser reactive power. To maintain proper synchronization between PV and grid system to suitable controller is designed for the inverter. For this purpose, this work proposes a svm controller for PV inverter to mitigate the system voltage fluctuations. Also, the method considers the loss associated with the reactive power production. Simulations are presented to assess the voltage regulation characteristics under different load conditions.

.**Key Words:** Photovoltaic System, P & O MPPT, Boost Converter, SVM controller and Grid Connection.

Introduction:

At present, most of energy demand in the world relies on fossil fuels such as petroleum, coal, and natural gas that are being exhausted very fast. One of the major severe problems of global warming is one of these fuels combustion products, carbon dioxide; these are resulting in great danger for life on our planet [1].

Among all the available Renewable energy sources, PV array systems are trusted to play a significant role in prospective energy production. PV systems transform photon energy into electrical energy. These energy systems generate low voltage output, thus, high step-up dc/dc converters are employed in many applications, including fuel cells, wind power, and photovoltaic systems, which converts low voltage into high voltage. Due to the increasing demand on electricity, and limited availability and high prices of non-renewable sources, the photovoltaic (PV) energy conversion system has becomes an alternative as it is freely available, pollution free, and has less operation al and low maintenance cost. Therefore, the utilization of PV energy systems has to be increased for standalone and as well as grid-connected modes of PV systems. Photovoltaic (PV) as a renewable energy resource naturally is not stable by location, time, season and weather and its installation cost is comparatively high. An important consideration in increasing the efficiency of PV systems is to operate the system near maximum power point (MPP) so to obtain the approximately maximum power of PV array. For getting maximum possible energy produced by a solar system.

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NEURO-FUZZY GRID-TIED PV SYSTEM WITH ACTIVE POWER FILTER FOR POWER QUALITY ENHANCEMENT

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Abstract

Generally, electric power system operators have seen photovoltaic (PV) power systems as potential sources of problems due to intermittency and lack of controllability. However, the flexibility of power electronic inverters allows PV to provide grid-friendly features including volt-VAR control, ramp-rate control, high-frequency power curtailment, and event ride-through. Commercially available smart PV inverters can further provide frequency down-regulation by curtailing power, but they are unable to provide true frequency regulation through active power control (APC) because they are unable to increase power on command. A coordinated DC-link voltage control and deloading control for two-stage PV system to offer frequency support in an islanded microgrid without energy storage system (ESS) is implemented. ANFIS based PV inverter control is developed for very fast and accurate control of active power.

.**Keywords**: Photovoltaic (PV) system, Active power filter (APF), Fuzzy logic proportional–integrator and ANN Controller

Introduction:

Power supply and power quality have been critical issues in power system recently. The grid-connected photovoltaic (PV) generator has nowadays become more popular because of its reliable performance and its ability to generate power from clean energy resources. The dc output voltage of PV arrays is connected to a dc/dc boost converter using a maximum power point tracking (MPPT) controller to maximize their produced energy. Then, that converter is linked to a dc/ac voltage source converter (VSC) to let the PV system push electric power to the ac utility. The local load of the PV system can specially be a non- linear load, such as computers, compact fluorescent lamps, and many other home appliances, that requires distorted currents. Development of a means to compensate the distribution system harmonics is equally urgent. In this case, PV generators should provide the utility with distorted compensation capability, which makes currents injected/absorbed by the utility to be sinusoidal. Therefore, the harmonic compensation function can be realized through flexible control of dc/ac VSC. Instantaneous power theory has successfully completed active power filter (APF) designing with good performance. However, the PV-APF combination has just been gradually developed for several years. This combination is capable of simultaneously compensating power factor, current imbalance, and current harmonics, and also of injecting the energy generated by PV with low total harmonic distortion (THD). Even when there is no energy available from PV, the combination can still operate to enhance the power quality of the utility. To the best of our knowledge, this idea was initiated in 1996 by Kim *et al.*. In this study, the PV system needs energy storage elements, which negatively increase the entire cost. Besides, the mathematical demonstration was not sufficiently provided. After that, the control techniques have been improved in some later efforts to develop PV inverters with real power injection and APF features. However, their research did not show consistent results obtained by their proposed theories, and they are applicable for a single-phase PV only. The most recent completely released paper in 2013 uses current references as the main functions of the dc/ac controller, which coincides with the basic ideas of this paper. By another manner in this paper, the proposed PV-APF controller utilizing power references shows some significant improvements in theory and a simple control topology. The PV-APF system helps the utility supply a unity power factor and pure sinusoidal currents to the local nonlinear loads by generating the oscillating and imaginary components. When there is an excess power, that PV unit will only inject average power to the utility. As a result, this system can be considered as a distributed APF, which is a better solution than adopting passive filters or centralized APFs.

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DESIGN OF A THREE PHASE HIGH VOLTAGE GAIN CONVERTER FOR FUEL CELL

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ABSTRACT

Generally, the power generating from the Fuel cell is an electrochemical reaction between H2 and oxygen and it generates electric energy, and the by-product is water vapour. However, the output from the fuel cell systems is very low, then it becomes necessary to connect more number of cells in series to improve the output. The proposed method electrically divides the fuel cell stack into different sections, and each stack is powered by a direct boost inverter. This project proposes a concept of high voltage dc-dc boost converter topology for a three phase system to a typical output voltage from the fuel cell as a stand-alone supply. The main advantage of the proposed boost inverter method include ability to deliver the operations of both boosting and inversion of the power in only one stage, compactness, and economical. The output voltage from the fuel cell is a voltage controlled method and output from the battery is a current controlled method. Analysis, and Simulation are taken from a 2kW prototype.

Introduction:

Day by day the fossil fuel reserve is decreasing, increasing the price beyond the affordable limit. Moreover, the vehicles using fossil fuels are polluting the environment, rising new regulations to lessen the emission of CO_2 . Because of this, world researchers are heading towards the renewable energy systems. Fuel cells and photovoltaic systems, for example, have become the prominent sources of renewable energy. Fuel Cell, in particular, has been as an emerging technology in today's world, making it possible to achieve a green and clean environment. However, the output voltage obtained from this source is very low.

As this system is normally integrated with the gird or fed to ac loads shown in Fig. 1 via a high dc input inverter, large voltage gain dc-dc step up converters are required to lift the small output voltage of the fuel cell [1]. Also, high gain dc-dc converters are used in various applications, for instance, automobile, LED lighting, switch mode power supply, telecommunications etc. Hypothetically, a conventional dc–dc boot converter can secure a large output voltage by using large duty cycle [2]-[4], resulting in different major problems, for instance, reverse recovery, electromagnetic interference, conduction loss at the switches, increased ripple inductor current and ripple output voltage etc.

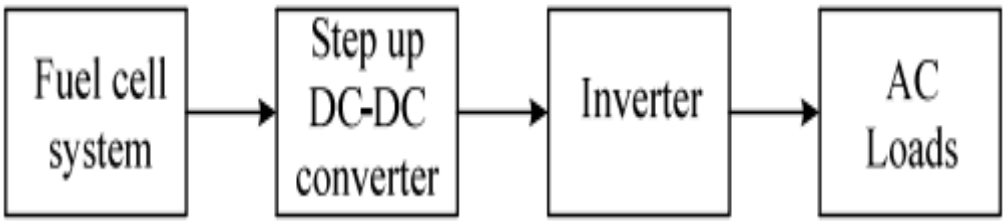

Figure 1: Typical fuel cell systems

To obtain high gain dc-dc conversion several dc-dc converters are employed which are basically divided into two categories- non-isolated and isolated converters. The conventional boost converter, cascaded converter, switched inductor and capacitor converters are the examples of the nonisolated converters. These converters can give a high output to input voltage ratio, but they need high duty cycle which causes ripple current of inductor and reverse recovery problem. Thus, the

FUZZY BASED UNIFIED POWER FLOW CONTROLLER USING A POWER ELECTRONICS INTEGRATED TRANSFORMER

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Abstract -The stability of an interconnected power system is compare to normal or stable operation after having been subjected to some form of disturbance. With interconnected systems continually growing in size and extending over vast geographical regions, it is becoming increasingly more difficult to maintain synchronism between various parts of the power system. This paper investigates the Custom Power Active Transformer (CPAT)'s capability to provide UPFC services which includes power flow control, reactive power compensation, voltage regulation and harmonics elimination. Simulations of the Fuzzy-UPFC with a stiff grid and a 5-bus power system demonstrates its functionality as an inter-bus coupling transformer that provides the required grid services. Moreover, the impact of the Fuzzy-UPFC during load perturbations on the power system is investigated to further validate its transient and steady-state response.

Keywords: CPAT, Transient Stability limit, UPFC, Fuzzy Logic Control.

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1. INTRODUCTION

An interconnected power system basically consists of several essential components. They are namely the generating units, the transmission lines, the loads, the transformer, static VAR compensators and lastly the HVDC lines. During the operation of the generators, there may be some disturbances such as sustained oscillations in the speed or periodic variations in the torque that is applied to the generator. These disturbances may result in voltage or frequency fluctuation that may affect the other parts of the interconnected power system. External factors, such as lightning, can also cause disturbances to the power system. All these disturbances are termed as faults. When a fault occurs, it causes the motor to lose synchronism if the natural frequency of oscillation coincides with the frequency of oscillation of the generators. With these factors in mind, the basic condition for a power system with stability is synchronism. Besides this condition, there are other important condition such as steady-state stability, transient stability, harmonics and disturbance, collapse of voltage and the loss of reactive power. Recent progresses in power electronics and as a result in Flexible AC Transmission Systems (FACTS) technology, give the ability to have a real time control on power system parameters and improve the transient stability. UPFC is one of the most effective FACTS devices, which is the combination of series and the shunt converter, connected together by a common DC link and have abilities of two FACTS devices named Static Synchronous Series Compensator (SSSC) and Static Compensator (STATCOM) together. Studies reported in literatures like have shown that UPFCs can be used to enhance the transient stability of the power system. All mentioned papers use Single Machine Infinite Bus (SMIB) power system for simulations. Literature have shown that quadrature voltage injection have most effect on transient stability improvement. As mentioned above, not much attention has been given to effects of UPFC on transient stability improvement of Multi-machine power system. In this paper a study is performed on transient stability comparison in multi-machine power systems using UPFC.

2. MULTI-MACHINE STABILITY

The classical model of the power system including the synchronous machines shown in is used to study the stability of the system. This is the simplest model used in the study of the system dynamics and requires a minimum amount of data to be collected initially. Moreover using this model the analysis can be made at a short interval of time. The time is of the order 1 sec in most power

A Superlative Hybrid Fuzzy Contolled ZSI-DSTATCOM for PEV Charging Stations

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ABSTRACT

A ZSI supported DSTATCOM has been proposed for improving the power quality of a power system and PEV charging station by using the Instantaneous Symmetrical Component Theory (ISCT) control technique. The main objective is presented in this work, for decreasing harmonics on the supply signals and elimination of large currents in the system due to a fault in the power system and PEV charging station. The proposed ZSI acts as a multi converter and has a feature of buck/boost. The power quality aspects are governed by the various standards such as the IEEE-519-1992 standard. Additionally, regulation of DC capacitor voltage at a desired level using a PI controller is not suitable for enhanced PQ features. The proposed intelligent Fuzzy control schemes are highly used in several applications, in that Hybrid-Fuzzy controller has been greatly recognized due to enhanced performance over the classical PI and Fuzzy controllers. This work compares the performance of ZSI-DSTATCOM with classical PI and intelligent Fuzzy-Logic controller in PQ enhancement. The proposed hybrid-Fuzzy controlled ZSI-DSTATCOM provides compensates all current-related disturbances like current harmonics, reactive power control, power-factor correction, unbalanced current and reduction in Total Harmonic Distortion, so on.

Keyword: - *Power Quality, Plug-In Electric Vehicles, Z-Source Inverter, DSTATCOM, Total-Harmonic Distortions, Fuzzy-Logic Controller, Hybrid-Fuzzy Controllers*.

1. INTRODUCTION

This has led to an increased interest in vehicle electrification, foremost electric vehicles (EVs) which can reduce fuel consumption compared to conventional vehicles, but also hybrid electric vehicles (HEVs). In EV's emission of pollution is not there and cost is less compare to conventional vehicles [1]. These EV have a major impact on the power gird & distribution networks due to the consequences of huge power demand to recharge their batteries. Large number of EV charging station when integrates with the utility grid, it produces harmonics, affect the current profile, finally affects the power quality. In this work, the impact of electric vehicle charging station on power grid and distribution networks is analyzed in terms of power demand, harmonics and unbalanced load conditions [2].

The distribution static compensator (DSTATCOM) gives quick control of active and reactive powers to permit load compensation, reduction of harmonics currents, voltage variations. The mitigation technique for reducing power quality disturbances is analyzed by using proposed Z-source supported DSTATCOM [3]. A ZSI supported DSTATCOM has been proposed for improving the power quality of a power system and PEV charging station by using the Instantaneous Symmetrical Component Theory (ISCT) control technique. The main objective is presented in this work, for decreasing harmonics on the supply signals and elimination of large currents in the system due to a fault in the power system and PEV charging station [4]-[6]. The proposed ZSI acts as a multi converter and has a feature of buck/boost. The power quality aspects are governed by the various standards such as the IEEE-519-1992 standard. Additionally, regulation of DC capacitor voltage at a desired level using a PI controller is not suitable for enhanced PQ features. But, this controller is unpopular due to tuning issues of current controller; the above-mentioned issues are regulated by using novel intelligent based Fuzzy-Logic controller achieving good performance features [7]-[9].

The proposed intelligent Fuzzy control schemes are highly used in several applications, in that Hybrid-Fuzzy controller has been greatly recognized due to enhanced performance over the classical PI and Fuzzy controllers. This work compares the performance of ZSI-DSTATCOM with classical PI and intelligent Fuzzy-Logic controller in PQ enhancement. The proposed hybrid-Fuzzy controlled ZSI-DSTATCOM provides compensates all current-related disturbances like current harmonics, reactive power control, power-factor correction, unbalanced current and reduction in Total Harmonic Distortion, so on. The performance of proposed ZSI-DSTATCOM is verified in both balanced and unbalanced loads by using classical PI and Intelligent Fuzzy, Hybrid-Fuzzy controller based ISCT for

Space Vector Modulation Based 31 Level Multi-Level Inverter for Nonlinear Loads

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Abstract: The proposed basic units are used as building blocks to form a cascaded multilevel inverter i.e. the new topology consists of cascaded basic units and it uses lower number of switching devices and gate driver circuits. The design of new topology consists of mainly two parameters: the number of cascaded basic units and the number of dc sources in each basic unit. These two parameters can be used to design the desired multilevel inverter based on the operational conditions. Therefore the new topology offers good flexibility in designing. To achieve better harmonic reduction and number of switch count a space vector modulation technique is chosen for controlling multilevel inverter. This proposed system is to be implement in MATLAB /SIMULINK and compare the results of proposed system with conventional 31-Level Multilevel Converter. The advantage of proposed new topology has reduces the number of switching components and improves the harmonics.

Keywords: Total harmonic distortion, Multi-Level Inverter, Flying capacitor, Induction Motor and PWM Technique.

1. INTRODUCTION

Multilevel inverters have found their place in medium-voltage high-power applications such as electric motor drives, flexible ac transmission systems and static VAR compensators. The desired multi-staircase output voltage is obtained by combining several dc voltage sources. Solar cells, fuel cells, batteries and ultra-capacitors are the most common independent sources used. Multilevel inverters generate stepped output voltage by a proper arrangement of power electronic switches and several dc voltage sources. As the number of output voltage levels increases, the output voltage becomes more identical to a sinusoidal waveform resulting in lower distortions. Multilevel inverters have some advantages in comparison with the conventional two-level inverters including the use of low-voltage power electronic switches and improved output voltage quality. This results in the lower stress on the power electronic devices and lower losses.

Various circuit topologies are available for multilevel inverters. The conventional topologies are divided into three main types: the neutral point clamped (NPC), flying capacitor (FC) and cascaded H-bridge (CHB) multilevel inverters. The NPC multilevel inverters have the problem of balancing the voltage of capacitors for higher number of voltage levels. Also, they need considerable number of clamping diodes. Therefore this type of multilevel inverters is limited to three-level case. The FC multilevel inverter and it derivative topology stacked multi cell multilevel inverter use FCs to produce the voltage levels. These inverters have the ability of self-balancing of the capacitors so that

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Research Article: Engineering

POWER QUALITY IMPROVEMENT IN WECS USING FUZZY – STATCOM

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Abstract: The major concern in a growing power quality is harmonics distortion which is caused by the non-linear nature of the loads. This problem has drawn much attention from utilities, users and industries. To reduce the harmonic distortion for improving the power quality of the system a custom power devices has been proposed. A static compensator (STATCOM) is implemented at distribution level for overcoming several power quality problems. In this paper, new control technic i.e AI is proposed on shunt compensator to estimates the weight values of load currents. The control approach is based on the convergence of the load currents and property of the input signal. A working prototype of the STATCOM is implemented using three-phase VSC and AI control technique based PWM controller approach is developed in MATLAB/SIMULINK.

Index Terms*—WECS, AI Technique, Power Quality, THD, STATCOM and VSC*

1 .INTRODUCTION

Generally, with increase in the power demand due to increase in population, utilization, the Generation of power was really a challenge now a day. Due to high utilization of non-conventional energy sources [1] as a one of the distribution energy source, may causes the stability problems such as voltage regulation and other power quality problems. Therefore, the power electronic based forced commutated converters are preferred in distribution system for maintaining the system stability, reliable performance and efficient work and also improving the quality of power at coupling junction point.

The current distortions in non-linear load may result same distortions in the system voltages and in some cases also shows the serious effect on power system. Generally, the problems in power system are more complicated and also have difficult to identify the problem when we integrate the wind energy system with grid connection [2]. If this problems continuous, it's mainly causes the damage

of system and also reduces the system efficiency. By controlling the system parameters such as magnitude of voltage, transmission impedance and load angle then we maintain the power flow. The power flow controlling device is a device which is used for varying and controlling the system parameters [3].

A shunt device is a compensating device i.e. which is connected between the grid connected point called as PCC and the ground [4]. Shunt device either can absorb or generate the reactive power for controlling the magnitude of voltage at point of common coupling.

The reactive power compensation is also one of the application of shunt converter devices [5]. Figure 1 shows the basic diagram for the shunt connected inverter based grid connected system [6].

ANFIS BASED GRID INTERFACED DFIG-WECS FOR POWER SMOOTHENING

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Abstract: This Paper proposes a concept of ANFIS based DFIG controller to variable speed wind turbine system for power smoothening. Power fluctuations due to the unpredictable nature of the wind are eliminated by introducing battery energy storage system in the dc link between two back-to-back connected voltage source converters. The design of BESS is presented for feeding regulated power to the grid irrespective of the wind speeds. The control algorithm of the grid-side converter is to implement with ANFIS for feeding regulated power to the grid. Rotor-side converter is controlled for achieving MPPT and unity power factor operation at the stator terminals. And also to improve the efficiency of WECS an MPPT controller is proposed in this project. The ANFIS based DFIG system is to be implement in MATLAB.

Key Words: Grid Control, micro-grid, wind power generation, ANFIS.

1. INTRODUCTION

Over the past few years, the growth in the use of nonlinear loads has caused many power quality problems like high current harmonics, low power factor and excessive neutral current. Nonlinear loads appear to be current sources injecting harmonic currents into the supply network through the utility's Point of Common Coupling (PCC). This results in distorted voltage drop across the source impedance, which causes voltage distortion at the PCC. Other customers at the same PCC will receive distorted supply voltage, which may cause overheating of power factor correction capacitors, motors, transformers and cables, and mal-operation of some protection devices [12].

The Distributed Energy Resources are one of the power generations systems in small scale range such as renewable energy resources examples of photovoltaic cell, wind energy generation system or hydro energy. Placing the microgrid concept near to the load centers have the advantage of improving efficiency by reducing the transmission line losses or voltage drops.

By increasing the domestic and commercial appliances and increasing demand of critical or sensitive loads causes the growing electricity consumption. In this paper a micro grid concept based single stage AC-DC converter is proposed for reducing processes of multiple reverse conversions in an individual ac or dc grid and to facilitate the connection of various renewable sources and loads to power system. The coordination control scheme such as maximum power point tracking converters are proposed for obtaining maximum power from the renewable energy sources under variations in input or any demand conditions [1]-[9]. This type of microgrid systems are even generated electrical power under normal abnormal conditions such as if it is solar it operate at room temperature or if it generates energy at normal speed i.e in plain surface area. However, power electronic based converters are proposed in this paper for controlling purpose.

Generally, harmonics and reactive power are two of the serious problems associated with the grid. They are caused by nonlinear loads, including saturated transformers, arc furnaces, and semiconductor switches. The presence of harmonics and reactive power in the grid is harmful, because it will cause additional power losses and malfunctions of the grid components [1]–[5]. To prevent the inflow of harmonic and reactive currents and to improve the operating ability of the transmission systems, a kind of Flexible AC Transmission System (FACTS) has been proposed [6]–[10]. The static var compensator (SVC) is an important component of FACTS.

2. GRID INTERFACING SYSTEM

In the present scenario, the integration of grid with the renewable energy sources such as photovoltaic system is the most important application. These advantages include the favorable

A NOVEL REDUCED-SWITCH MLI TOPOLOGY FOR GRID TIED SOLAR-PV SYSTEM

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ABSTRACT

Due to the depletion of conventional energy sources and environmental impacts, the role of renewable sources for energy generation has become a prior choice nowadays. A solar photovoltaic (PV) based micro-grid with a reduced-switch MLI topology has been presented. The proposed MLI topology is designed with the aim of reducing the number of switches and the number of dc voltage sources with modularity while having a higher number of levels at the output. For the determination of the magnitude of dc voltage sources and a number of levels in the cascade connection, three different algorithms are proposed. The optimization of the proposed topology is aimed at achieving a higher number of levels while minimizing other parameters. A detailed comparison is made with other comparable MLI topologies to prove the superiority of the proposed structure. A fundamental frequency PWM technique is used for pulses to the switches to achieve high-quality voltage at the output. Finally, the proposed 71-level RSMLI topology is designed by using cascading form of two basic 11-level RSMLI topologies to drive the micro-grid system powered by solar-PV system, simulated results are presented with proper comparisons.

Keyword: - *Multilevel Inverter (MLI), Fundamental Frequency Switching Technique, Reduced-Switch MLI, Micro-Grid, Solar-PV System*.

1. INTRODUCTION

A mid of crucial period is implied during its evolution in an electric power industry. A high range of violations are occurred in both transmission-distribution levels which have some critical expectations followed in a very near future. The energy generation plays a key role to determine the economic growth level & sustainable development in all over the country. Several ranges of eminent challenge & significant despite growth level in overall generation plays a major concerns facing by India's power sector. Over the several years ago, India's power sector is highly suffering from unconstrained supplies & energy shortages. To implement this energy standard challenges are developed based on economy range of world 21st century by grid standards [1]. Nowadays Renewable Energy Sources (RES) are getting widely used with the accumulation of demanded energy and major concerns related to environmental impacts around the world due to usage of fossil fuels. Over the various renewable energy sources, the solar-PV is best suited due to ample in nature, virtuous and toxic nature, etc.

The energy coming from the solar-PV is integrated to micro-grid by using power conditioning system; it consists of DC-DC converters and DC-AC inverters with a suitable control scheme. But, various issues in traditional 2-level and 3-level VSI are not suited affectively due to square-wave output voltage, high dv/dt stress, more common-mode voltage, high switching losses and low efficiency, requires large-sized filters for getting sinusoidal outputs [2]. All the above issues are eliminated by introducing the Multi-Level Inverters (MLIs), at present MLIs plays a key role in grid-connected system. The concept of multilevel converters has been introduced since 1975. The cascade multilevel inverter was first proposed in 1975. Separate DC -sourced full-bridge cells are placed in series to synthesize a staircase AC output voltage. The term multilevel began with the three-level converter [3].

Subsequently, several multilevel converter topologies have been developed. In 1981, diode-clamped multilevel inverter also called the Neutral -Point Clamped (NPC) inverter schemes were proposed. In 1992, capacitor-clamped (or flying capacitor) multilevel inverters, and in 1996, cascaded multilevel inverters were proposed.

Implementation of SVM based Interleaved DC-DCConverter for Multi-directional EV Charging

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ABSTRACT

This paper proposes a new interleaved non-isolated high step-up dc-dc converter for interfacing electric vehicle applications. The proposed converter achieves a very high step-up voltage gain by using two coupled inductors and a voltage multiplier cell. This topology utilizes the interleaved boost converter in the input side, and the input current is shared with low ripple. The voltage stress on the semiconductor switches and the passive components is significantly reduced and lower than the output voltage. The aforementioned converter can be operated without an extreme duty cycle or a high turns ratio. The reverse recovery problem of the diodes is mitigated, and the leakage energy is recycled. Furthermore, by implementing low-voltage-rated MOSFETs with a small ON-resistance, the conduction losses can be reduced, and the efficiency can be improved. The SVM based control algorithm for the DC-DC converter is designed to stabilize output voltage and enhance the performance of the system during transient operations. To verify the design, two-phase interleaved synchronous DC-DC buck converter is simulated in MATLAB-Simulink based environment and simulation results on resistive load are presented.

INTRODUCTION:

In the last decade, the utilization of fossil fuels and pollution problems more in vehicle applications. To overcome these problems the car manufacturer companies introduced electric vehicles. But the cost and weight of battery were not solved, since the batteries must provide power in peak stage and in transient state. These are some severe problems for batteries. Super capacitors and fuel cells have been used to overcome the problems in battery. Either battery or fuel cell or hybrid electric vehicles are environment friendly and more efficient as compared to combustion engine based vehicles. In the present scenario, hybrid electric vehicle and plug-in electric vehicle have been introduced to overcome the insufficient storage of battery operated EV.

In this paper, mainly focused on designing of battery charger for plug-in charge electric vehicle. The PEV charging or discharging conditions for available power and also gives the information provided by the energy management system instead of reducing the charging time by using only maximum power levels. To maintain this EMS, a simple power electronic based topology has been introduced. The design of the charger was based on bi-directional dc-dc converter which improves the efficiency of the system. The proposed DC-DC converter approach fulfills the desired operation of the bi-directional charger in the energy management system as compared with the topologies available in the literature. The power electronic converters have been used to size the passive elements by controlling voltage and current levels within the bounds.

The proposed single stage converter in the literature is simple topology with less components, but to operate the drive motor effectively, the single stage converter faces difficult. To overcome this problems, a boost type single stage converter has been proposed to obtain three-phase voltage even from a low-level DC input

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Design and Analysis of SVM based DC-DC Converter for Electric Vehicle

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ABSTRACT

This paper proposes a scheme for changing the operation modes of bidirectional DC/DC converter used in battery powered electric vehicles (EVs). The proposed pattern changes the converter operation from boost to buck according to the DC-link voltage value. This strategy is suggested to save power and increase efficiency of the EV energy storage system (ESS). A buck-boost DC/DC converter is adopted to boost the DC-link voltage in driving mode, and to charge the battery in braking mode. In boost mode, PI control of DC-link voltage is implemented to maintain constant DC-link voltage in driving operation. In buck mode, PI control of battery voltage is applied to reduce ripples of battery voltage. In both modes of operation, current control schemes are applied to keep equally sharing of battery current between converter modules. To validate the performance of the proposed scheme, a simulation is performed and verified with EV propulsion system.

Introduction:

Nowadays, electric vehicle (EV) industry is growing rapidly due to serious crises such as air pollution, global warming, and rising demand for fossil fuels. Power electronic converters and drive systems are the main parts of EVs, and several research projects are conducted to achieve higher density and efficiency in these converters. EVs come in a variety of types, such as pure electric vehicle (PEV), hybrid-electric vehicle (HEV), fuel cell-electric vehicle (FCEV) and so on. All of these vehicles have electric motors powered by batteries that are connected to the motor by voltage source inverters (VSI‘s).

With the growing interest in decreasing the fossil fuel utilization and pollution, electric vehicles (EVs) have emerged as an applicable alternative to conventional gas engine vehicles. The development and increasing utilization of EVs requires widely distributed charging stations due to the limited EV battery capacity. However, large scale of directly grid-connected charging stations, especially fast and superfast charging stations, stress power grid stability and reliability with peak demand overload, voltage sag, and power gap issues. Some researchers have been integrating photovoltaic (PV) generation with EV charging infrastructure; however, the PV integration is still considered as a minor portion of power source for EV charging stations in researches. As for the higher demand of fast-speed charging during daytime, the rapid development of PV generation optimizes power consumption at peak hours with its adequate daytime generations. With respect to the intermittency of solar energy, a battery energy storage (BES) can be employed to regulate the DC bus or load voltage, balance power gap, and smooth PV power.

Design and Analysis of SVM based DC-DC Converter for Electric Vehicle

Mr. A.Sekhar Sunil[1], Mrs. A. Sai Pallavi [2], Mr.K.P.Prasad Rao[3]

[1, 2,3]Assistant Professor, Department of EEE, PSCMRCET, Vijayawada, Andhra Pradesh, India

ABSTRACT

This paper proposes a scheme for changing the operation modes of bidirectional DC/DC converter used in battery powered electric vehicles (EVs). The proposed pattern changes the converter operation from boost to buck according to the DC-link voltage value. This strategy is suggested to save power and increase efficiency of the EV energy storage system (ESS). A buck-boost DC/DC converter is adopted to boost the DC-link voltage in driving mode, and to charge the battery in braking mode. In boost mode, PI control of DC-link voltage is implemented to maintain constant DC-link voltage in driving operation. In buck mode, PI control of battery voltage is applied to reduce ripples of battery voltage. In both modes of operation, current control schemes are applied to keep equally sharing of battery current between converter modules. To validate the performance of the proposed scheme, a simulation is performed and verified with EV propulsion system.

Introduction:

Nowadays, electric vehicle (EV) industry is growing rapidly due to serious crises such as air pollution, global warming, and rising demand for fossil fuels. Power electronic converters and drive systems are the main parts of EVs, and several research projects are conducted to achieve higher density and efficiency in these converters. EVs come in a variety of types, such as pure electric vehicle (PEV), hybrid-electric vehicle (HEV), fuel cell-electric vehicle (FCEV) and so on. All of these vehicles have electric motors powered by batteries that are connected to the motor by voltage source inverters (VSI‘s).

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SVM based 31-Level Multilevel converter With Reduce Switch Count

A.Sekhar Sunil[1], Mrs. B.Jyostna[2], Mr K.Kiran Kumar[3]

[1,2,3]Assistant Professor, Department of EEE, PSCMRCET, Vijayawada, Andhra Pradesh, India

ABSTRACT

Multilevel inverters are a new family of converters for dc–ac conversion for the medium and high voltage and power applications. In this project, two new topologies for the staircase output voltage generations have been proposed with a lesser number of switch requirement. The first topology requires three dc voltage sources and ten switches to synthesize 15 levels across the load. The extension of the first topology has been proposed as the second topology, which consists of four dc voltage sources and 10 switches to achieve 31 levels at the output. Both topologies, apart from having lesser switch count, exhibit the merits in terms of reduced voltage stresses across the switches. Therefore the new topology offers good flexibility in designing. To achieve better harmonic reduction and number of switch count a space vector modulation technique is chosen for controlling multilevel inverter. This proposed system is to be implement in MATLAB /SIMULINK and compare the results of proposed system with conventional and 31-Level Multilevel Converter.

Keywords: Total harmonic distortion, Multi-Level Inverter, Flying capacitor, Induction Motor and PWM Technique.

INTRODUCTION

Multilevel inverters have found their place in medium-voltage high-power applications such as electric motor drives, flexible ac transmission systems and static VAR compensators. The desired multi-staircase output voltage is obtained by combining several dc voltage sources. Solar cells, fuel cells, batteries and ultra-capacitors are the most common independent sources used. Multilevel inverters generate stepped output voltage by a proper arrangement of power electronic switches and several dc voltage sources. As the number of output voltage levels increases, the output voltage becomes more identical to a sinusoidal waveform resulting in lower distortions. Multilevel inverters have some advantages in comparison with the conventional two-level inverters including the use of low-voltage power electronic switches and improved output voltage quality. This results in the lower stress on the power electronic devices and lower losses.

Various circuit topologies are available for multilevel inverters. The conventional topologies are divided into three main types: the neutral point clamped (NPC), flying capacitor (FC) and cascaded H-bridge (CHB) multilevel inverters. The NPC multilevel inverters have the problem of balancing the voltage of capacitors for higher number of voltage levels. Also, they need considerable number of clamping diodes. Therefore this type of multilevel inverters is limited to three-level case. The FC multilevel inverter and it derivative topology stacked multi cell multilevel inverter use FCs to produce the voltage levels. These inverters have the ability of self-balancing of the capacitors so that they can be extended to higher number of output voltage levels easier

SVM based 31-Level Multilevel converter With Reduce Switch Count

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A REVIEW ON CLASSIFICATION OF LAND USE/LAND COVER CHANGE ASSESSMENT BASED ON NORMALIZED DIFFERENCE VEGETATION INDEX

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ABSTRACT:

Land cover is more effected spatially and temporarily based on land use changes. Depending on increasing demands of population growth, changes in Land Use/Land Cover (LULC) occurs which are regular funders of land surface. It is essential to know the information of land cover for environmental policies, agriculture, economy. Remote sensing technology is more powerful to obtain Earth's surface features at numerous temporal and spatial changes. Change in LULC disturbs the natural environmental, ecological conditions and also changes the quality of water in that area. The Normalized Difference Vegetation Index (NDVI) is the most used vegetation indices to analyze and assess remote sensing images to identify whether the land of interest has green vegetation or not. By computing NDVI with the help of multi spectral data, the spatial distribution of remote sensed data that is the information of water content, constructional area, vegetation and high-density vegetation can be obtained. While comprehensive surveys of related problem is not well surveyed. A huge quantity of classification techniques are established to address this problem and the objective of this paper is to classify and review these techniques. The aim of this survey is to afford up to date works that provide potential path for further research in land cover change assessment using NDVI.

KEYWORDS: LULC; Remote Sensing; NDVI; Multi spectral data; Spatial distribution

I. INTRODUCTION

Land cover change detection and classification is a substantial technique used to plan the interested region in an efficient manner [1]. Geographical Information System (GIS) and Remote Sensing (RS) are used in obtaining LULC information to get change monitoring [2]. The required spatial and spectral features of various objects are obtained by using multispectral remote sensing images [3]. LC and LU are two different perceptions where LC highlight the natural assets used as the replication of numerous foundations in global surface enclosed with natural atmosphere or manual erection. However, LU, provides information of land's societal assets, renovation activities that human implements to manage and normalize the land persistently and occasionally rendering their needs. Whirling of natural environment into social environment is known as land-use, and it's a complex process due to artificial consequence of

nature, economy and society [5]. Mostly multi spectral images are used to find NDVI which is the key parameter in assessing land use/cover classification. The NDVI is usually founded on difference between red band and near infrared band of EM spectrum of satellite images. Values of NDVI lies between -1 to +1and for soil and vegetation the values are positive [4]. NDVI is used to identify green vegetation indicators such as chlorophyll content, green vegetation content, leaf area index [6].

1.1. LULC

To prepare land use record a supervised digital classification method is implemented. LULC is classified into two different methods: i) unsupervised; and ii) supervised classification.

Unsupervised classification:

It provides natural clusters of multispectral data by considering common characteristic pixels based on software analysis. Clustering is done by using K-means and ISODATA. It is a basic technique. Steps involved in Unsupervised classification are as follows:

Analysis of Land Surface Temperature, Land Use Land Cover Change of Vijayawada City using Remote Sensing and GIS

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Abstract:

Land use/land cover (LULC) change has serious consequences for environment as LULC is directly associated with land degradation over a period of time and results in several changes in the environment. Monitoring the places and distributions of LULC changes is significant for establishing links between governing actions, policy verdicts, and subsequent LULC activities. Land use and land cover change has become a central component in current strategies for dealing natural resources and monitoring environmental changes. This change is also responsible for temperature variations on the land surface. This study evaluates the diverse effects of land transformation on the natural environment using Land Surface Temperature (LST), Normalized Difference Vegetation Index (NDVI). To achieve this, Remotely Sensed data from Landsat 8 OLI sensor of year 2020 of Vijayawada city are utilized.

Keywords

Land use/Land cover(LULC), Land Surface Temperature(LST), Normalized Vegetation Index(NDVI), Remote sensing.

Inroduction

The climate system is always changing due to the changes that human-being made. In an urban environment natural and human-induced environmental changes are of concern today because of deterioration of environment and human health. Global Environment strongly depend on the Land use and Land cover changes [11], [12]. Land cover changes increase energy exchanges between atmosphere and surface thus have an impact on the local climate.

Nearly 14% of the existing forest area is lost between 2019 and 2020 in India and the forest cover has been reduced to 46% worldwide [8]. If this trend continues, the Earth will be at a huge risk and no one will be able to save our mother Earth. Thus it is really important to analyse the land use/land cover change and planning and management should be done accordingly.

Land use and Land cover are two different terms which can be used interchangeably. Land cover is the cover of the land i.e., grasslands, pastures, forests etc., and Land use is how we use the land cover i.e., built-up, agricultural areas, and others. Traditional methods have many complexities which make analysing of LULC changes hard. Thus new technologies like Remote Sensing and Geographical Information Systems(GIS) can be used to analyse LULC changes [5], [9], [14]. Using these new technologies will make the analyses easy and accurate.

This paper deals with analysing the LULC changes and calculating Land Surface Temperature(LST) and Normalised Difference Vegetation Index(NDVI). NDVI gives the changes in Vegetation [17], [18]. LST gives information about the change in Surface Temperature of the Earth [16].

The main objective of this paper is to analyse LST of Vijayawada city in response to LULC changes using NDVI.

AUTOMATIC SANITATION OF SOLID WASTE FROM SEWAGE

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ABSTRACT

In this paper we mainly deals with the problem of sewage blocking which is partly responsible for many accidents. This proposes a framework which will provide a better approach to avoid the accidents which are due to the problems of water stagnation. This protocol includes a GSM module, microcontroller board, Ultrasonic sensors, DC Servo Motor and an Aurdino IDE, LCD . This involves many innovative mechanisms. The Ultrasonic sensors are used to measure the flow rate of liquids and the level of liquids that it is raised respectively. The Ultrasonic sensors are that helps to give the signal of being stagnation to the nearby municipal office. The stagnation is basically due to the garbage blocking the flow and the other is delay done by not receiving a signal to the authority responsible. By taking these into consideration, the problems are rectified maximally. Thus, the framework can results in minimal rate of sewage blocking roads pronging accidents.

Keywords
Sanitation, Arduino UNO, Drainage, Ultrasonic sensor, GSM, LCD.

INTRODUCTION

Water is being used very fast in today. The significance of water is mainly used for cooking, Cleaning and drinking in our lifestyle. The water used in the factory and the house comes from the drains and reaches in the rivers, in the ponds and in the oceans. In which more solid ingredients (polythene, bottles etc) along with water also reaches. We have built Automated drain cleaning machine with the main purpose of removing these solid materials from drains. This machine can be established at any point of drain very easily. It has been design in such a way that its lets water flow through it but collects all the solid substances and gives a group in the dustbin. This machine is able to do cleaning and moving process together on the drains.

Fig.1. Manual Cleaning

The Drainage water cleaner system are used to clean wastes from water like polythene, bottles etc. present in water .This can be used to overcome the problem of filtration of wastes from water and it save the time and cost that spend on cleaning the drainage. As the industry setup increase in the environment the water coming from industries are full of wastes like polythene, bottles, and other materials and that water mix with the other water that are used bypeople and we know that that water is not good for the health of people. So to overcome from these problems we can filter the water drainage water before it mix with other water.

IOT BASED AUTOMATIC VEHICLE ACCIDENT DETECTION AND RESCUE SYSTEM

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ABSTRACT

In our everyday life we are confronting a great deal of issues because of road accidents. The popularity of cars has likewise expanded the traffic hazards and road accidents. Life of individuals is under high danger. Blockage to conquer this issue our programmed emergency vehicle rescue system comes on schedule to save the human existence. This proposed IOT based accident location system assists with diminishing the death toll because of accidents and furthermore decreases the time taken by the emergency vehicle to arrive at the medical clinic. To identify the accident there is accelerometer sensor present in this rescue system and the GSM module included sends messages about the area to their guardians and rescue system.

1.INTRODUCTION

The internet of things [IOT] is a course of action of interrelated figuring devices, mechanical and computerized machines, articles, creatures or person that are given one sort of an identifier and the ability to trade the over a framework without expecting human to human or human to pc correspondence data.

The fast ascent of innovation and framework has made our lives simpler. The appeal of cars has additionally expanded the traffic hazards and road accidents. Life of individuals is under high danger. The postponement in coming to of the rescue vehicle to the mishap area and the gridlock in the middle of accident area and clinic expands the odds of death of the person in question. This proposed IOT based accident recognition system assists with diminishing the death toll because of accidents and furthermore lessens the time taken by the rescue vehicle to arrive at the clinic. To identify the accident there is accelerometer sensor present in this salvage framework and the GSM module included sends messages about the area to their guardian and rescue team. With the assistance of accelerometer sensor signal, a serious mishap because of a deterrent can be perceived. Microcontroller

SMART MASK

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Abstract:

Face masks provide effective, easy-to-use, and low-cost protection against airborne pathogens or infectious agents, including SARS-CoV-2. There is a wide variety of face masks available on the market for various applications, but they are all passive in nature, i.e., simply act as air filters for the nasal passage and/or mouth. In this paper, we present a new "Smart mask" paradigm, in which the wearable device is equipped with smart sensors to detect the heartbeat, blood oxygen levels, breathing abnormality, air quality measurement and temperature. The proposed system communicates with the user via a smart phone application that provides various alerts and in case of any emergency will send the notification to the registered numbers. This features help in taking safety measures and prevent covid.

Introduction:

The world has been witnessing the increasing spread of COVID-19 since the beginning of 2020. This novel virus has brought everyone's lives to a standstill and the economy to its knees. Although most people are actively following social distancing norms, proper hygiene, and other technologically advanced preventive measures [1], it is likely that normal day-to-day life will continue to be affected until an effective vaccine is developed. To mitigate this situation and return to some semblance of normalcy, we believe there is a need for preventive methods that actively combat the virus instead of providing passive protection (e.g., physical barriers) [2]. Implementing such improved methods requires smart devices that can detect, quantify, and actively eradicate viruses and other pathogens.

Typical Personal Protective Equipment (PPE), such as face masks (cloth, surgical, or N95), face shields, eye protection, disposable gloves, and coveralls all provide passive protection: these devices only prevent pathogens from entering the body by filtering them out. By contrast, active protection devices can actively attack and destroy pathogens near vulnerable parts of the body (e.g., the nose and mouth). Here we consider closed-loop active or "smart" masks for use in places where potentially virus-laden respiratory droplets (typically 0.110 μm in diameter) are most likely to be transmitted; examples include bathrooms, doctor's offices, day-care centres, and public transportation.

A detailed comparison of existing masks with the proposed smart mask is shown in Table I. The table shows that the proposed system detects airborne droplets (potentially containing viruses for COVID19, influenza, measles, or other diseases) and limits their spread via an appropriate situation-aware mitigation strategy. The chosen strategy should be "smart", i.e., adaptive based on sensor outputs that provide information on concentration, size distribution, and other properties of the droplets. In our initial implementation, mitigation is provided by a cold mist generator that loads the droplets (thus making them quickly fall to the ground), and adaptation is provided by algorithms running on an on-board

SMART HEALTH CARE SYSTEM FOR PATIENTS USING Lo-Ra TECHNOLOGY

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ABSTRACT

With a development in generation and miniaturization of sensors, there had been tries to utilize the new era in various regions to improve the first-class of human existence pattern. One primary place of research that has seen an adoption of the technology is the healthcare quarter. The people in need of healthcare services locate it very costly that is mainly real in developing countries. As an end result, this task is a try to solve a healthcare hassle presently society is facing. The essential goal of the assignment was to layout a far-off healthcare device. It's made from 3 important components. The first element being, detection of sufferer vitals using sensors, 2d for sending statistics to cloud storage and the closing element turned into imparting the detected statistics for remote viewing. Remote viewing of the facts enables a medical doctor or father or mother to monitor an affected person's fitness development far from hospital premises.

The Internet of Things (IOT) concepts were widely used to interconnect the to be had medical resources and offer smart, reliable, and effective healthcare service to the sufferer. Health monitoring for active and assisted living is one of the paradigms that could use the IOT blessings to improve the sufferer lifestyle. In this assignment, I actually have provided an IOT architecture custom designed for healthcare applications. The intention of the assignment changed into to provide you with a Remote Health Monitoring System that can be made with locally available sensors on the way to making it low cost if it have been to be mass fabricated.

Hence the proposed architecture collects the sensor records thru Arduino micro controller and relays it to the cloud where it's far processed and analyses for faraway viewing. Feedback moves based on the analyzed data can be sent back to the health practitioner or guardian via e-mail and/or SMS alerts in case of any emergency.

INTRODUCTION

The Internet of Things (IoT) is an association of interrelated computing devices, mechanical and digital machines, objects, animals or individuals which can be given one type of an identifiers and the potential to exchange facts over a system without requiring human-to-human or human-to-PC communique. IoT is a new idea that has evolved from the convergence of Wi-Fi technology. Wireless communique is the transfer of information or signal between two or more factors that are not linked through an electrical conductor. In IoT gadgets equipped with Wi-Fi permit the gadget-to machine communique.

HEALTHCARE is a critical a part of existence. Unfortunately, the regularly growing old population and the associated rise in continual infection is setting great strain on current health-care structures, and the demand for assets from health centre beds

Automatic Covid Testing Registration and Crowd Control Management

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ABSTRACT:

In view of the current pandemic covid testing plays a key role in fighting the pandemic. The with this testing we can easily to detect the infected person and necessary treatment to them. For covid testing, we need to first register manually and then go for a swab test. Here the key concept of our assignment is to provide automatic registration without any guide force and to lessen the touch of sufferers with every person. The current system for registration only provides online slot booking which has been stated as a big issue for the people who need urgent checkup and medication. Here, we use the Raspberry pi, camera, IR sensors. When a person approaches the kit, the camera detects the person and requests for his/her ID proof, and registers the person using the details on the proof provided.

Keywords: IoT, Raspberry pi, IR Sensors, LED Screen, RPi Camera

INTRODUCTION:

Internet of factors, IoT as an essential part of the new generation of statistics era, have advanced rapidly both in concept and exercise considering the fact that proposed, and gradually derived many applications which includes smart home, wise environmental tracking In the current day scenario where the covid is seriously targeting every single individual, the current project aims to try and save a few frontline workers.

Automation is described as “The technique of making an equipment, a manner, or a gadget operate robotically.” ISA (International society of Automation) defines automation as "The creation and alertness of generation to monitor and manipulate the manufacturing and shipping of serviced products”As there are Three sorts of automation in manufacturing can be outstanding: (1) constant automation, (2) programmable automation, and (three) bendy type

IoT Gateway gadgets act as a communication bridge among IoT Sensor Network and Cloud Server. IoT Gateway Devices are emerging as key elements in bringing subsequent-gen gadgets to the Internet of Things (IoT). They assist to integrate protocols for networking, help manipulate garage and side analytic at the records, and facilitate records float securely among aspect tool and the cloud.

The current project deals with the front-line workers who work at registration desks for corona testing. The IoT technology with the raspberry pi and IR sensors is used to automate the registration process while controlling the crowd if the crowd density exceeds the limit provided.

REMOTE MONITORING SYSTEM FOR HYDROPONIC PLANTING MEDIA

A project report submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

In

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CHAPTER 1

INTRODUCTION

1.1 PREFACE

The word hydroponics has its derivation from combining the two Greek words, hydro, meaning water, and ponos, meaning labor (i.e., working water). The word first appeared in a scientific magazine article (Science, 178:1) published in February 1937 and was authored by W. F. Gericke, who had accepted this word as was suggested by Dr. W. A. Setchell at the University of California. Dr. Gericke began experimenting with hydroponic growing techniques in the late 1920s and then published one of the early books on soilless growing (Gericke 1940). Later he suggested that the ability to produce crops would no longer be "chained to the soil but certain commercial crops could be grown in larger quantities without soil in basins containing solutions of plant food." What Dr. Gericke failed to foresee was that hydroponic growing would be essentially confined to enclosed environments for growing high cash value crops and would not find its way into the production of a wide range of commercially grown crops in an open environment.

Hydroponics is the science of soilless gardening. It entails growing healthy plants without the use of typical soil media, instead relying on a nutrient such as a mineral-rich water solution. To thrive, a plant only requires a few nutrients, water, and sunlight. Plants not only grow without soil, but they often grow better with their roots submerged in water.

Due to its more sustainable approach to resource utilisation than traditional growing methods, hydroponic farming is quickly becoming a popular alternative for many gardeners throughout the world. Here are a few of its numerous advantages:

Hydroponics allows plants to develop up to 50% quicker than they would in soil by delivering constant and easily available nourishment. A hydroponic garden can also provide fresh produce throughout the year. When compared to traditional soil gardening, hydroponic farming completely eliminates the need for herbicides and pesticides, which is good for both the environment and the grown product. Any water used in hydroponic farming remains in the system and can be reused, decreasing the requirement for a continuous supply of new water!

The Nutrient Solution Ready-to-use store-bought solutions can be utilised in hydroponics nutrient systems, or you can create your own custom solutions for different types of crops based on the chemical ingredients that the plants require the most.

Primary nutrients (nitrogen, potassium, magnesium), secondary nutrients (calcium, sulphur, phosphorus), and micronutrients make up the ideal nutrition mix (iron, copper, manganese, zinc, molybdenum, boron). Here's a basic nutrient solution recipe that you may produce at home by diluting the nutrients in 20 litres of filtered water.

25 ml of $CaNO_3$ (calcium nitrate)
1.7 ml of K_2SO_4 (potassium sulfate)
8.3 ml of KNO_3 (potassium nitrate)
6.25 ml of KH_2PO_4 (monopotassium phosphate)
17.5 ml of $MgSO_4$ (magnesium sulfate)

NDVI and NDWI Based LU/LC change detection of Visakhapatnam city, Andhra Pradesh using Landsat8 data

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Abstract— *Anthropogenic actions have significantly changed natural and scapes, exclusively in regions which are enormously affected by population growth and climate change. Understanding the Patterns of land-use and land-cover (LULC) change is imperative for efficient environmental management, including effective water management practice. By means of remote sensing and geographic information system (GIS), this study illustrates changes in patterns of LULC using normalized difference vegetation index (NDVI), and normalized difference water index (NDWI) of Visakhapatnam region using Multi temporal satellite imagery of The Landsat8 series of the year 2020. Supervised classification technique is used to compute land-use/cover changes. Producer's accuracy, user's accuracy, kappa coefficient, overall accuracy is calculated.*

Keywords: land use/land cover, NDVI, NDWI, GIS, Remote Sensing.

1. Introduction

Cities in India are getting overcrowded and expanding uncontrollably due to regular rural migrations. Human activities such as deforestation and urban development may have large impact on the Land Use (LU) and Land Cover (LC) and climate change that have a great impact on Global human supporting capacities [1]. So the need of information about the Land Use and Land Cover information is rapidly increasing from time to time due to the changes that are occurring because of urbanization, industrialization and natural calamities etc. In the present scenario, LU and LC classification using remote sensing image plays a vital role in numerous applications like biological resources, agricultural practice, land use planning and forest management. In order to properly understand 'why' Land use/Land cover changes and how they occur it may be necessary to have information on the cause and factors influencing on it.

LU/LC means the areas which are used for human for their need. It is an important element for understanding and modelling the both manmade and natural earth surface. LU and LC are two separate terminologies that are often used interchangeably .LU indicates that the land has been used by humans and their habitat. LU/LC maps also helps us to study the changes that are happening in our eco-system and environment. It also provides a better understanding of land utilization aspects. Over the years Remote sensing has used for Land Use and Land cover mapping in different parts of India. Accurate and up-to-date land cover change information is necessary to understand and to assess the environmental consequences of such changes. Remote Sensing and Geographic Information System (GIS) [2] have been combined to detect and control urban encroachments in a way which is easier and faster than the traditional methods of surveying the urban environment. The present study has been taken up in order to understand the changes that have taken place in land use/land cover of Greater Visakhapatnam Municipal Corporation (GVMC) [3]. Remote sensing is science of acquiring, processing, and interpreting images and related data that are obtained from ground-based, air-or space-borne instruments that record the interaction between matter (target) and electromagnetic radiation. Remote sensing technology provides large coverage of the earth surface with repetition which is beneficial for analysis and inventory of surroundings and its resources especially for LULC and change detection. The aim of this study was to assess the trend of land use and land cover change in the Visakhapatnam city, Andhra Pradesh. In this study, LULC changes had investigated using remote sensing data with the help of GIS and ENVI software.

Landsat is one of the most used remote sensing satellites. Features of Landsat 8 are as follows: It has two different operating sensors (mention ref. No.).

TABLE 1. Characteristics of OLI and TIRS sensors on image Landsat

SMART CARS FOR SAFE DRIVING

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DEPARTMENT OF ELECTRONICS AND COMMUNICATIONS [1, 2, 3, 4]

ABSTRACT :

One of the leading causes for vehicle accidents deaths of speeding, Controlling the speed of the vehicle to reduce the occurrence of accidents in speed restricted zone. It limits the deficiency of property and life. As per the new studies, in the previous few years, a mishap close to the school zones, emergency clinic zones and sharp turnings have expanded colossally, in light of their rush to get the designated place soon.Thusly controlling vehicle speed has been a significant issue to be thought of. This paper means to give a reasonable, minimal and straightforward plan to foster a programmed vehicle speed control framework, which must be rapidly get executed in school, speed breaker, clinic, sharp going zones to diminish the quantity of mishaps. This robotized speed controlling framework is fabricated utilizing the microcontroller-based foundation of the Arduino Uno board. Here the Arduino is customized so that, the endorsed speed limit was fused in the transmitter unit which communicates the signs, and it was gotten by the beneficiary in the vehicle utilizing RFID innovation and the speed of the vehicle was naturally constrained by the information signals by the receiver.

1 INTRODUCTION

1.1 OVERVIEW

At present accidents are mostly occurs due to rash driving and over speed in road, to reduce the road accidents and to make a peaceful environment for the people. hence speed control is in need to be implemented in all the vehicles .Here is the ground breaking thought of our own to introduce a robotized speed control framework in the vehicles chiefly in the limited regions. Here arrangement gadget as a labels where the various gadgets are joined to screen the speed of the vehicle when the vehicle enters over the endorsed speed and controls it's anything but a per user at the vehicles, in view of the signs communicated the speed of the vehicle get decreased by interfacing a microcontroller. The current speed of the vehicle is detected by the DC engine and its yield was given to the microcontroller where it contrasts the speed and as far as possible and the speed is controlled naturally. The technology used in this system to communicate between tags and reader is RFID technology, which covers up to 10-200m with in its range .Thusly this framework controls and screens the general vehicles in its covered region. By executing this framework the mishaps are diminished in this quick world. In the created and non-industrial nations, individuals discovers bother with the street mishaps, sticking of vehicles in light of the drivers who abhorrence to submit to the laws at the confined zone, where the speed must be restricted as endorsed in that zone by utilizing a robotized speed control framework to restrict the speed naturally RFID innovation .If any accident occurs the Accident Detection device will send the exact location of the place where the accident occurred to the nearest Police station, Ambulance, Relative number. In this project we employ a liquid flow measuring device placed at the petrol tank to measure the quantity of the petrol from the petrol gun in the petrol bunks, so the frauds occurring at petrol bunks can be eradicate.

1.2 STATEMENT OF PROBLEM

In existing system, that allows the vehicle to slow while approaching another vehicle and accelerate again to the pre-set speed when traffic is cleared. And also we cannot control the vehicle in restricted zones . only we can control the speed of the vehicle when the another vehicle is approaching. In existing system, if any accident occurs we cannot find the position of the vehicle. In existing system we cannot eradicate fraud occurring at the petrol bunks.

2 LITERATURE REVIEW

2.1 LITERATURE INTRODUCTION

A new overview shows that the most extreme pace of genuine street mishaps are raised because of high wild speed than needed speed restricted in the specific zone and furthermore because of uninformed hindrances. Limiting the quantity of pace of mishaps and their most noticeably terrible outcomes are the most challengeable undertaking for the car maker, traffic government specialists and car innovative work gatherings. The significant requirements for the driver while driving the vehicle is familiarity with the limited zone in any term either

Underwater Health Monitoring Device

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Abstract

Wireless communication technology today has become part of our daily life.The idea of wireless underwater communication may be different.However,research has been active for over a decade on designing the methods for wireless information transmission underwater.Water data communication is potential technology to realize underwater communication.Experiment is different withthat in real water environment because physical scale is limited.Here we are preparing a system to monitor the health conditions like heart beat,body temperature,humidity,oxygen saturation levels of a sea navigator by using separate transmitter and receiver modules.So that we can save the life of many navigators.

Keywords

Underwater communication,IR transmitter module,heart beat sensor,pulse oximeter sensor,biomedical conditions.

Introduction

Underwater wireless information transmission is of countless importance to the military, industry and the scientific community.The experiment of underwater opticalcommunication within the laboratory is different within the real water environment because the physical scale is restricted.Normally sea navigators or fisherman require an additional support from the land when something uncharacteristic things happen within the sea, we have to pass the message to them. With development of the technologies our people can predict what happen in the sea, but to transfer these messages to sea navigators or fisherman is difficult. So as to avoid these issues we introduce an enhanced system named under water data communication. This paper discusses about the underwater data communication system used for transferring messages to sea navigators or fishermen and also as we can monitor their health conditions. We use water data communication module to get the text and sensor readings to the ground from navigator and this will help us to avoid the undesirable death of navigators undersea. Since the conditions of underground water even temperature, pressure may vary in any condition; it also contrasts the body temperature, blood pressure of navigator. So if it lowers or higher during a wide selection, it cause even the death of the navigator. It also provides the needed medical aid to the concerned person. It is applicable for staffs of forces, marine drivers and other people who participate in water entertainments. This is often what we haveaccomplished with wireless underwater communications.

Literature survey

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SMART ATTENDANCE SYSTEM USING FACE RECOGNITION

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Abstract: ***The Method of calling each student and taking attendance is a more time consuming method.The project proposed is to take attendance with face recognition and to display the list of absenties in led display and it can also capable to identify multiple faces in real time.The daily attendance of students is recorded subject wise, using KNN Algorithm to develop this system, where to detect faces and identifies multiple faces in real time. Led display is also used to display the time table or college notifications and other various marketing purposes during free time.***

Keywords: KNN Algorithm,OpenCV

1.INTRODUCTION

During this Era of Technology and Automation we are as yet utilizing the standard, worn out methods of Classroom Management. The main thing in Classroom is Attendance which is straightforwardly connected to the scholastic Performance of the understudies. As of late, some of understudies are occupied with better during addresses just when there is gigantic Classroom control.The more Efficient the Attendance System the more is Class cooperation and Learning. In the past we were using Techniques like roll Numbering calling and signing against a particular roll number. These techniques convey a high possibility of intermediary and are tedious.We came across the idea of Automating this process to through modern day Technologies to get a well Maintained and Disciplined Classroom.Facial Recognition System alongside appropriate Hardware and Software will assist with meeting the objectives of this venture. Our center spotlight will be on getting computerized pictures and afterward utilizing projects and calculations to receive valuable Information in return.

2.LITERATURE REVIEW

Detriments of RFID (Radio Frequency Identification) card framework, unique finger impression framework and iris acknowledgment framework. RFID card framework is executed because of its effortlessness. Be that as it may, the client will in general assist their companions with checking in as long as they have their companion's ID card. The unique finger impression framework is without a doubt compelling yet not proficient in light of the fact that it requires some investment for the confirmation interaction so the client needs to arrange and play out the check individually. Notwithstanding for face acknowledgment, the human face is constantly uncovered and contain less data contrasted with iris. Iris acknowledgment framework which contains more detail may attack the security of the client. Voice acknowledgment is accessible, however it is less exact contrasted with different strategies.Hence, face recognition system is suggested to be implemented in the student attendance system.

Smart Door Lock Security System Using Raspberry Pi & QR Code

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ABSTRACT:

The Internet of Things has made it easier than ever to line up a smart home in which you can remotely control your door locks, lights, thermostats, vacuums, lawn mowers, and even pet feeders, using your Smartphone and an app. Using Raspberry Pi as a heart of the circuit, we can design a simple and effective Home security system. We use LED's, Tilt sensor, Raspberry Pi, Raspberry Camera, PIR Motion sensor, QR code and a mobile through which we can operate everything.

The device is installed at the main entrance of the house and if any human movement is detected, the PIR sensor detects the presence, enables the camera to scan the QR Code. If the QR code is in the authorized list, it opens the door else remains closed. The Raspberry Pi 3 is one of the IoT boards which come equipped with on-board TCP/IP stack, so, they can be readily connected to an IoT network. The user will also be alerted via a buzzer that works as an alarm. The Pi uses OpenCV library to capture images from the Pi Cam and send them over registered Email address of the owner.

Key Words: Quick Response system, QR, Smart Classroom, Raspberry Pi

1. INTRODUCTION

All home security systems works on the fundamental principle of securing entry points, like doors and windows, also interior space containing valuables like art, computers, guns, and coin collections. Doors, locks, alarm systems, lighting, motion detectors, and security camera systems falls under security system hardware. Practices like ensuring doors are locked, alarms are activated and windows are closed falls under personal security. Security vulnerability is especially caused by the keys of mechanical door lock often lost, copied or stolen. To overcome the problem, keyless door lock systems have been introduced and these have become one of the most popular security systems that are being installed in many residential and business places as well as the educational institutes.

An electronic lock is a secure device which operates through current. The key characteristic behind such system lies on the reliability during which the authorized individuals can obtain permission to access the doors throughout a secure system that has an interactive interface like using fingerprint or using designated password to enter it. QR scanner is believed to be one of the best methods which are way cheaper than RFID and are easy to handle. Apart from that, additional security such as the monitoring device is essentially important. Without monitoring system, the administrator will not have information of the activities happening.

2. LITERATURE SURVEY

Home automation system has grown rapidly, which provide us with convenience, comfort and mainly quality of life and focus on security for all the residents. People are habitual of automated devices, which are commonly known as smart devices, with the rapid development in the field of technology everyday new devices are created, the IoT has also emerged as boost up to make smart device even smarter. In today's era most homes consist of electrical devices which are controlled manually but with evolution of IoT these devices made the working simpler and controllable by automation. Today the main concern is security. With the use of these IoT based devices security can be achieved and full equipped home security measures can be taken. "Quick Response" (QR code) is a matrix code. As compared to one dimensional barcodes it must store huge volume of information and using any handheld devices like Smartphones, it must be decrypted at high speed. When a bar-code contains vital information or privacy information, the chance of security becomes a very important aspect. Because QR codes merely feature a square bar-code with a distinctive pattern, individuals are not aware if the code can take them to respectable information or misguide them to a website loaded with malware.

PREVENTION OF FIRE ACCIDENTS IN TRAINS

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ABSTRACT

Now a days, fire accidents are increasing drastically in rail transport. These fire accidents in trains results in loss of human lives and trains property. The main reason for fire accidents are AC short circuit, smoking and carrying of crackers. In this project we are using fire sensors to detect the fire accidents in trains. whenever the fire detectors detect the fire, a buzzer will be activated and give indication to the passengers like coach number through LCD and information is passed to loco pilot through this buzzer and LCD, he will gradually decrease the speed and stop the train. At the same time, whenever the fire is detected in the train, a power activation and deactivation unit deactivate a power in the train and activates battery bulbs in the compartments of the rail transport. simultaneously, the information will be passed to the nearest police stations, ambulance, fire stations, railway quarters .

Key Terms: Fire detection, buzzer.

I.INTRODUCTION

Trains are useful vehicles for transporting people and goods. Generally, people prefer the train journey for longer distance as it is cheaper.The fire accidents in trains are among the most serious disasters which cost human lives and affects property of Indian Railways. Therefore ,the prevention of fires in trains has become a matter of serious concern for Railways.

Train fires are different from other fires in due to the manner in which it breaks out, grows and spreads. Running trains catching fire is more dangerous and fatal than those caused in a static mode, due to the fanning effect which spreads the fire rapidly to the entire train causing the panic in the passengers, who might resort to escape by jumping out of the running train. When human life is involved the matter deserves special mention. Therefore it is necessary to take all possible preventive steps to avoid a fire from breaking out in coaches,

SMART LANDMINE DETECTION ROBOT USING ARDUINO MICROCONTROLLER

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ABSTRACT

Landmine removal is a critical problem faced by many countries around the world, and the situation can be compounded by natural disasters or land development. Therefore, it is an urgent issue to detect landmines in the ground and remove them safely. The process of landmine removal starts with the detection of landmines in the ground. For safe detection, non-touch-based detection methods are required. Using the landmine detectors, we can avoid the death of civilians and soldiers. We can make a simple and effective landmine detector using Arduino Microcontroller, Metal detector, Buzzer, DC Motor, LoRa module, GSM and few wires to establish the connections. We design the circuit on a board and attach 4 wheels to make it mobile. The robot system is embedded with the metal detector capable of sensing the landmine and enables the buzzer which then alerts the nearest soldier of the landmine.

Keywords

Arduino microcontroller, Metal Detector, Buzzer, DC Motor, LoRa Module, GSM.

I INTRODUCTION

In recent times, the world has come across many bomb blast fatalities in newspapers, media. These fatalities have increased much more these days and they are not only found in territories but also in crowded areas[1]. So, surveillance mainly near the borderlines in the military scenario to protect soldiers, residents of that area from enemies is needed. Many people are losing their lives without their involvement due to the landmines that are buried inside[2]. By using this unmanned device detection and the relocation of the bomb with the in-built robotic arm without human intervention is possible. Hence the human presence in this detection is reduced.

To save ourselves from these landmines, nowadays, there are many sensors technology, Robotics, data processing and algorithms that are available[3]. They are integrated with vectors, sensor fusion, neural networks to diffuse the landmines and with controls. There are two types of landmines namely antitank and antipersonnel mines[4]. Antitank mines are used to destroy means of transport. These landmines are generally buried deep inside the ground. Antipersonnel mines are deployed to kill humans. These are very dangerous. Normally, landmines are of different shapes and sizes and are made up of metals, wood and plastic[5]. There are many methods like Metal detectors, Ground Penetrating Radars, forward-looking Infrared, Dogs for detecting these mines. Mostly, landmines are made of metals. So, to detect these metal bombs metal detectors are employed[6].

AUTOMATED ENHANCED LEARNING SYSTEM USING IOT

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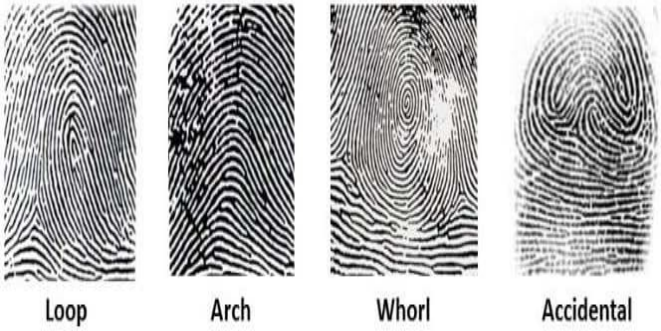
ABSTRACT:

In current scenario engineering students are facing problems in grasping the subjects, henceforth level and quality of education is regularly declining. One of the probable cause of this decline in quality of education is students are not able to understand and comprehend the subject. A solution to this problem is proposed in this project. It is based on the theory of three preferential learning style of an individual namely visual, auditory and kinesthetic (VAK Theory).So the present approach is based on classifying the students based on their preferential learning styles accordingly. The proposed system put forwards an IOT based system which will help in reducing manpower of faculty member and enhance the performance of students from 5 to 42% by custom designing activities as per the innate learning styles.

INTRODUCTION

Learning styles play an important role in grasping and understanding power of an student. If the activities, assignments, tutorials etc. are designed as per the preferential learning styles of the student it can result in significant improvement in grasping and understanding the subject by the student. Fingerprints are formed in the womb of the mother and they can be utilized to identify the learning style ofthe whorl, loop, arch, and accidental as shown in the figure. 1. Ridges on the skin of palm and toes begin to form in after 13th week. Embryo grows in maternal body. The formation of these patterns i.e. dermal patterns remains unchanged for the whole life. The formation and analysis of these patterns is correlated with development of brain and learning style of an individual.



In This paper titled "Preferential complementary learning style-type indicator" described an automatic system which employed a web application based Indicator Test of identifying preferential learning style of the students however their work was solely focused upon preferential styles of learning, but they did not discussed 978-1-7281-1253-4/19/$31.00 © 2019 IEEE anything about VAK theory. They also analyzed that the learning style of a student resulted in time saving during the assessment of the student rather than using conventional methods such as questionnaire. Their model was known as Preferential Complementary Learning PCL. PCL focused on one's personality and learning ability, identifying the individual as a whole. P. Gounon and X.Dubourg [3] in their work represented a model to prepare tutoring activity for learning environments. They begin by process a tutoring activity, then they

AMBULANCE ROUTING WITH SMART MONITORING

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ABSTRACT:

The main purpose of this project is to develop a smart movable road divider and ambulance. The smart ambulances will monitor vital signs at the patient, locating near hospital. The smart movable road divider focuses on reducing the latency in the traffic and free path for ambulance. The smart ambulance will send patient vital details to the hospitals database simultaneous monitoring the road dividers.

After getting the status of vital parameters hospital authorities will plan accordingly. Our system ensures response emergency situations by automatically monitoring road divider by using IoT.

1.INTRODUCTION:

The count of vehicles using the roads has increased, the static road infrastructure is almost the same and is unable to cope with changes like congestion, unpredictable travel-time are taking a serious shape.

The purpose of using a road divider is to separate the two LANES of traffic i.e. moving the vehicles in the traffic.

It is to automate change road divider and announce the status of the patients to the hospital. Controlling traffic on the road has become a severe problem in today's society.

There are so many situations where the ambulance gets stuck in traffic, it has to wait for some minutes to hours to clear the traffic congestion due to which the patient's life might be at risk because of the latency in the traffic. Increasing traffic has few severe environmental issues related to it, such issues include traffic jams, traffic congestion, and numerous types of pollution and related health problems.

Congestion in traffic eventually results in slow speeds, which increases the time of Travel. When vehicles are fully stopped for periods of time, this is colloquially known as a traffic jam or traffic snarl-up.

The number of lanes on either side of the lane is fixed which a problem with static roads. And creates the shortest path from the ambulance to the hospital.

The density of the traffic is measured using IR Sensors by deploying it on either side of the lane. If the density is high on one side the divider is moved to the other side for free flow of the vehicles.

In an ambulance, we will check some conditions of the patient and send the details to the hospital. The conditions of the patient are sent to the hospital by using an app. The app we are using is Things view. The conditions of the patient will be automatically updated to the app. So that the people at the hospital will arrange the requirements.

CATTLEYA ORCHID FLOWER SHAPE MICROSTRIP PATCH ANTENNA FOR WIRELESS COMMUNICATION

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ABSTRACT:

Due to the fastest growth in communication systems, the remote combinations are required for various applications. In this, the main antenna plays an important role to interface RF system with air. There are many antenna shapes like wave guide, line, and micro strip etc are available. The Micro strip patch antenna is very popular because of its flexibility and reliability. It is available in various traditional structure like rectangular, circular, elliptical, etc., are popular. Now the micro strip patch antenna also available in number of shapes even in fractal shape also exists. Now a days, the antenna structure got with Bio-inspired antennas and are more popular. In this work, Cattleya Orchids Flower (COF)shape is proposed, it may have compact/wide band applications and this design made for the wireless communication. The proposed design of a flower shape patch etched on FR4 substrate. The design and stimulation carried by HFSS tool and the return loss, gain, radiation pattern will be recorded. The proposed model will have their application in ISM band.

1.INTRODUCTION

The development in technology and an increment in the remote communication standards has to be improve the antenna structure that can be easily integrated. A Microstrip patch antenna is a class of planar antennas which have been researched and developed extensively in the last four decades.In this work, a bio-inspired microstrip antenna (BI-MPA) for wideband application is proposed for the antenna in between 2.60 dB and 10.221dB and the radiation pattern is quasi-omnidirectional. The aim of the proposed antenna to understand the forms, functions and behaviour of the living organisms. Since the authors have been involved with the

DESIGN and ANALYSIS of ELECTRICALLY SMALL ANTENNA (ESA) for 2.3/3.3GHz APPLICATIONS

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ABSTRACT:

An electrically small, low profile, multi-band antenna is proposed for 2.3/3.3GHz applications.An electrically small or electrically short antenna has the dimension less than one wavelength of the signal. Electrically small antennas can be used in Small Form Factor (SFF) devices for various applications like GPS,WLAN,WIMAX,DARS etc .Electrically short antennas are generally less efficient and more challenging to design than that of longer antennas such as quarter and half-wave antennas. The limitations of electrically small antennas are gain, bandwidth and radiation pattern.An FR-4 substrate with ε_r =4.4 and h=1.6 is used.The return losses at frequencies 2.3 GHz and 3.3 GHz are -22.68 dB and -27.32 dB. In this project electrically small antenna is designed and simulated by Using HFSS software and analyze the various parameters like Return loss ,Bandwidth,VSWR, Radiation patterns and also Field distributions.

Keywords: *Miniaturization, Electrically Small Antenna, WiMax, HFSS Software,CSRR.*

I. INTRODUCTION

An ESA or electrically small or electrically short antenna is an antenna much shorter than the wavelength of the signal it is intended to transmit or receive. Generally electrically short antennas are less efficient and more challenging to design than longer antennas like quarter- and half-wave antennas, but are nonetheless common due to their compact size and low cost[1].Recently, a non-Foster circuit-based matching technique was introduced to overcome the fundamental limits in antenna miniaturization previously reported[2-4].The fundamental limit for electrically small antennas (ESA's) was addressed by Wheeler in 1947.The widely used mathematical definition is the antenna which satisfies "ka" less than 1. where "k" is the wave number ($2\pi/\lambda$) and "a " is the radius of the smallest sphere containing the radiating part at the antenna operating frequency[5].In 1948 according to Chu ,these ESA have a minimum Q value.Q is inversely proportional to the electrical size[in terms of wavelength] of an antenna, it restricts the attainable impedance bandwidth for a given antenna size. McLean modified this earlier work on minimum antenna Q for a perfect lossless matching network, and a new Q limit is proposed for a small antenna (Q_L)[6-7].

Parameters for ESA's such as gain, which efficiency and bandwidth degrade considerably with the decrease of their electrical size "ka".The devices that usually implement ESA are referred to as Small Form Factor (SFF) devices. Usually these devices are small in dimensions, i.e.,height, width, and weight, usually consume minimal power; hence it can be operated for a longer period[8].

In recent years, with the rapid development of wireless communication technology, the modern communication systems and devices including antennas are driven to be more and more miniaturized. Therefore, electrically small antennas with re configurable characteristics are highly desirable, especially for Current portable and wearable devices such as personal digital assistants (PDA), smart phones, laptops and USB dongle devices.The designed Electrically small antenna operates in S band at frequencies 2.3 GHz and 3.3GHz for the WiMax and satellite based digital audio radio service broadcasting(DARS) applications . A complementary split ring resonator(CSRR) is placed in the ground of the proposed antenna which makes antenna to resonate at the 2.3 GHz frequency [12].

The paper is organized as follows. In Section II the detailed antenna design geometry is discussed.Its results are described in Section III.

SMART SENSING AND MONITORING OF HEALTH USING IOT

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DEPARTMENT OF ELECTRONIC AND COMMUNICATION [1, 2, 3, 4, 5]

Abstract: *Every community has supporting groups that are responsible for routine health monitoring of all community members to reduce doctor and nurse works. Internet of Things (IoT) is one of the technologies that can help to support in health monitoring system. This IoT health monitoring system is designed for detecting fluctuations in the health parameters. The portable measuring device can measure the heart rate, oxygen levels , respiratory rate and body temperature, keeping the readings on LCD display. When the threshold range and recorded readings mismatch, the system will send a message to the family contacts and also alert his surroundings with a buzzer. This application can keep track of all measuring devices and community member records by using Micro-controller. IoT heartbeat, oxygen level, respiratory rate and body temperature monitoring system is proposed to improve monitoring of four main vital signs with low-cost. With IoT, the system can send warnings in real-time to particular contacts with which the diagnosis of heart rate and temperature can be done anywhere over the internet.*

INTRODUCTION

Many countries around the world are experiencing an increase of people with health problems and illness. In 2019, the number of people deaths due to health problems raised by more than 2 to 8.9 million out of the total world population of 7,673 million people, representing 12.5 percent. For Thailand, it has entered the aging society since 2005 and will completely enter the aging society in 2021 that the number of the elderly population will be as high as 20 percent [1]. The government needs to allocate more health care budgets every year which will ultimately affect the country's economic growth. In addition, it is leading to the shortages of efficient medical equipment and medical providers. The community health volunteer, who is responsible for providing advice and public health assistance to people in the community, can help to reduce the shortages. The aim of this paper is to develop a smart device which monitors patient health of four main vital signs and also provides data and alert signals using Internet of Things work for the community health volunteer.

Internet of Things (IoT) is one of the technologies that can help to support in health monitoring system. The four main vital signs regularly checked are pulse rate, body temperature, breathing rate, and oxygen levels. IoT Health monitoring system is proposed in this paper to improve monitoring of four main vital signs with low-cost. With IoT, the system can send the warnings in real-time to caretakers and also their respective family members which helps them to monitor and diagnosis the heart rate, oxygen levels, respiratory rate and temperature anywhere over the internet.

The Multipurpose sensor is used for multiple applications. It is a heart rate monitoring sensor along with a pulse oximeter. The sensor consists of two Light Emitting Diodes(LEDs), a photodetector, and a series of low noise signal processing devices to detect heart rate and to perform pulse oximetry. The sensor consists of two parts, an emitting diode and a photo receiver. The photodiode emits monochromatic red light and infrared light of different wavelengths. The light emitted gets absorbed by the oxygenated blood and the rest of the light is reflected through the finger and falls over the detector and then output is taken. The heartbeat is the number of heartbeats per

SMART GLASSES FOR BLIND PEOPLE

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ABSTRACT:

- ***These "Smart Glasses" are designed to help the blind people to read and translate the typed text which is written in the English language.These kinds of inventions consider as solution to motivate blind students to complete their education despite all their difficulties its main objective is to develop a new way reading texts for blind people and facilitate their communication. The main task of the glasses is to scan any text image and convert it into audio text, the person will listen to the audio through a headphone that's connected to the glasses.The glasses are provided by Ultrasonic sensor which is used to measure the required distance between the user and the object that has an image to be able to take a clear picture. The picture will be scanned and also presses the button. All the computing and processing operations were done using the RaspberryPi3B+ and Raspberrypi3B.For the result,the combination of using OCR with EAST detector provide really high accuracy which showed the ability of the glasses to recognize almost 99%ofthetext.***
- ***However, the glasses have some drawbacks such as supporting only the english language and the maximum distance of capturing the images is between150-300cm.As a future plan it is possible to support many languages and enhance the design to make it smaller and more Comfortable to wear.***

IOT BASED MULTI-PURPOSE ROBOT FOR MILITARY APPLICATIONS

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DEPARTMENT OF ELECTRONIC AND COMMUNICATION [1,2,2,2,2]

ABSTRACT :

This work describes about the design, construction and fabrication of multi-purpose field surveillance robot that can be used for land mine detection, toxic gas sensing and temperature and humidity sensor monitoring in war fields without putting serious manual risks. Which is basically used to increase army's capability. The land mine detector can detect covered metals, gas sensor can detect toxic gas attacks and the robot can be controlled wirelessly by Android phone. The robot uses Arduino Uno microcontroller to gather sensor information and ESP8266 Wi-Fi module to interface the controller and the robot. Based on the input information from Android application, the robot can make moved and climbed on any terrains. The distinguishing feature of our project from traditional ones is that the integrated design of Android phone operation and multiple IOT cloud servers. All sensor information are delivered to cloud servers (Things Speak Cloud) and viewed through Webpage. This way the robot can be used both at Military war fields and monitored at Military headquarters simultaneously. This is a novel attempt to integrate field robots and IOT technologies at an expandable mode of design. Additional enhancement of the design made it an outstanding choice for deployment and Due to Landmines thousands of army men were injured and killed in many conflicts, Hence the use of this robot in dangerous zones infested with land mines and other hazardous metallic item to save army's lives .

Keywords- Robotics, Embedded Systems, Internet of Things (IOT), Wireless Communication and Cloud Technologies

I. INTRODUCTION

A landmine is an explosive device implanted in the earth and triggered by pressure, magnetic fields and tripwires, among several others. They are one of the most common weapons used in contemporary combats and are most often used as preemptive barriers and opponent deterrents. They are trifling, usually round devices intended to hurt or kill people by an explosive detonation or flying fragments. Most mines are made of plastics and contain about the large quantity of metal as the spring in a ballpoint pen. The growth of the anti-tank mine was encouraged by the use of battle tanks during World War I. Anti-personnel mines were established to replace these larger mines that could easily be removed by enemy soldiers. The development and use of the landmines we know today became a chief military strategy in the middle of 1918 and 1939. At this time, mines were castoff in a careful manner and precisely targeted at militaries. It wasn't until the 1960s that the unsystematic distribution of landmines began. Today, there are still tens of millions of anti-personnel mines in the ground and amassed in over 60 nations. Due to Landmines thousands of army men were injured and killed in many conflicts.

- Landmine fatalities deprive communities and families of salary earners and precious parents, relations, spouses, and relatives.
- Per United Nations, around 2,000 people are killed or injured by landmines every month.
- Over half the landmine fatalities are civilians. Among civilian losses, more than 40% are children.
- The cost of a mine is in between $3 and $30. The cost to neutralize a mine is between $300 and $1,000 and surgical care costs about $3,000 per amputee in developing countries. Buried landmines can continue active for over 50 years.
- Landmines have battered and killed thousands of Army men in every battle since the 1900s, including the recent wars in Iraq and Afghanistan.
- Landmines set in motion a series of events that can lead to environmental damage in the form of soil degradation, deforestation, and the pollution of water resources.

WOMEN SAFETY BASED ON VOICE SENSOR

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Abstract- In today's era, sexual harassments are occurring very rapidly in society. This problem is compounded when one shift the focus from urban to rural area. When women are doing night shifts there is no safety for her. At that time most of the harassments are happening mainly in remote areas. This paper purposes a system by creating the wireless network using IOT technology with a voice sensor which was present in the portable devices. In this device we inbuilt some keywords like "HELP, SAVE……." When women needs a help and screams for a help then automatically it will connect the call to our particular contact peoples and police station within the particular range. On these days crimes becoming like a daily routine in our country.

1 INTRODUCTION.:

Overview:

In today's era, safety of women has become very crucial. They can't step out from their place at any time because of the fear of physical/sexual harassment and violence. Even in the 21 century, there is no safety for women's even though technology is developed and many gadgets are invented for the women safety. Now a day's are women/girls are playing equal role with men in the society. To promote the liberty they often work across the religious, political and cultural divides. Women's are not fit as men so they need a helping hand in that critical situation. We propose a system to help the women in emergency situation. This application is specially designed for safety of women. It is simple and easy to use. The basic function in this application is to send the call and location to the registered number, so that we can avoid the unfortunate situations. The voice recognition technology used in the device make it automated and an instant response. This application is linked with the local police stations and the concerned contacts to send help to the victim as early as possible. When women in the emergency situation used the voice based contacts list and make a call when they are required. Women safety is major problem in our country and also in other countries. There is no safety for women to travel lonely at mid nights or in unknown places. In this time their mobiles phones are becoming their best friends of the user. User can contact their loved once at any time. If anybody needs a help they can make a call to their contacts. Even though there is a solution at that situation a women cannot hold the phone and make an call efficiently in that situation there is a chances to mobile phone may fell down to overcome this

A Novel 6G Communication Based Rescue System

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***Abstract*— Transmit data from one place to another we have different methods like telecommunication, wired communication, cellular communication, internet etc. Coming to cellular data transmission, the data transmits from mobile to nearby cell town. As we increase the cellular towers wavelength increases and frequency decreases. To avoid this problem we are designing a new way of communication using old method linked list in programming. In this method throughout a city it consist only one cellular tower with average range of receiving signals. But if the person is in out of the range from cellular tower then each person who using this communication device acts as repeater. From source 'A' sends the signal to source D that is cell tower will transmit the signal from repeater 'B' and then to repeater 'C'. By this method we can design most of the complicated works like accident detection, child wearable safety device so on.**

Keywords: GSM, linked list, Cellular network.

I. INTRODUCTION

Next-generation communication systems aim to achieve high spectral and energy efficiency, low latency, and massive connectivity because of extensive growth in the number of Internet-of-Things (IoT) devices. These IoT devices will realize advanced services such as smart traffic, environment monitoring, and control, virtual reality (VR)/virtual navigation, telemedicine, digital sensing, high definition (HD), and full HD video transmission in connected drones and robots.

Third generation partnership project (3GPP) is already working on the development of 5G standard and has identified massive machine type communication (mMTC), ultra-reliable and low latency communication (URLLC), and enhanced mobile broad band (eMBB) as three main use cases for 5G in its Release 13. At the same time, algorithms for the next generation communication systems, which will have the performance higher than that of existing 5G networks, are being developed . A typical 5G communication system has the capability to support at most 50,000 IoTs and/or narrowband IoT (NB-IoT) devices per cell . Specifically, a more robust network must be designed to realize the massive access in beyond 5G (B5G)/6G communication systems. We now discuss comprehensive literature that has appeared on various dimensions of 6G networks.

II. PROPOSED SYSTEM

A New method of communication using linked list is a concept to send the data without using a gsm module.

The proposed system is to develop a device for the safety and security of the child. The wearable device is in the form of the hand glove or watch etc. which can be worn. The device monitors the health condition of the child with the help of temperature and heart beat. The wearable device is consists of some switches which transmit red alert or green alert to police, hospitals and parents.

Here we using Lora module by replacing GSM module. The Lora module acts as a transceiver. Lora provides long-range Connectivity by utilizing several spread-spectrum techniques.

In this method there is a receiver hub is at police station and hospitals which covers a range of 500mts to 10Kms. It covers a long range connectivity, if the person is out of the receiver range then the system which transfers the signal will receive by another person who uses the device. It retransmit the signal from one node to another node and from then to another node as a several spread – spectrum techniques , device until it reaches to the receiver range. This device simply acts as a repeaters. After the node traveling from node to node at last it reaches the receiver hub

ADAPTIVE BEAMFORMING FOR SMART ANTENNA ARRAY SYSTEM USING LMS ALGORITHM

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ABSTRACT

Smart antennas widely used for wireless communications, which consist an antenna array with beam signal processing unit. A smart antenna has an ability to increase the coverage in required direction and provide a null in the interference direction. This is done through smart antenna arrays and the associated adaptive beam forming algorithm. The system provides opportunities for higher system capacity and directive radiation in desired direction. This work proposes an adaptive beamforming algorithm using Least Mean Square (LMS) method. The proposed algorithm is simulated using MATLAB. The simulation results show the beam radiation in the desired user direction of arrival (DOA) and interference or null in the interference direction (DOI). It also shows the weights used in algorithm and number of iterations

KEY TERMS :LMS, Array Factor, Adaptive Beamforming, Smart antenna

I.INTRODUCTION

In recent years, a highs peed wireless communications is strongly required. In wireless communication systems, multipath fading, delay spread and interference signal is occurred by reflection or diffraction. In a high-speed wireless communications , it becomes an important issue to separate desired signal and delay or interference signal. Smart antenna for overcoming this problem is using high function antennas. Smart antenna solutions are presented on different aspects of code technologies in active antenna with fixed beam forming and adaptive beam forming techniques. This improve spectral efficiency and to deliver significant improvements in coverage, quality of service and capacity.Adaptive beam forming is a technique in which an array of antennas is used to achieve maximum reception in the direction of desired user while signals of same frequency from other directions are rejected. This is achieved by varying the weights of each of antenna used in the array. A smart antenna system combines multiple antenna elements with a signal- processing capability to optimize its radiation and or reception pattern automatically in response to the signal environment. Multiple antennas have ability to enhance the capacity and performance without the need of additional power or spectrum. In adaptive beam forming the optimum weights are iteratively computed using complex algorithms based upon different criteria. The criteria for choosing the adaptive beam forming algorithm is depends on its performance and convergence rate. Adaptive beam forming

CAMPUS AUTOMATION SYSTEM

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DEPARTMENT OF ELECTRONIC AND COMMUNICATION

ABSTRACT:

Campus management is becoming a very essential component in education in these modern days. With the help of campus automation system, we can gather all the use full information needed to the management in few clicks. In this project we aimed at developing campus automation system which will manage the working of the campus management activities using single platform. This system has easy interface and powerful data management, attendance monitoring, water management, exam paper display, fire management, light and fan automations. The data from the sensors of the specified environmental parameters have been collected and monitored. The main objective of this project is to reduces the man power needed to perform different task.

INTRODUCTION:

Campus Automation is becoming a very essential component in education in the modern days. With the help of Campus Automation System, we can gather all the useful information needed to the management in few clicks. Campus Automation System consists of different modules such as student, faculty, admin etc. Campus automation main purpose is to automate all functionalities of a college to perform different operational task. Using this system we can manage all information of all aspects of a college, of students, faculties, Departments, and other curricular activities.

This system provides the easiest way to manage all the college activities. This system also facilitates colleges to maintain the functionality related to attendance monitoring, water management, fire management, light and fan, automation, plants growing to maintain greenery in the Campus.

The Campus automation system automates the complete campus through a digital infrastructure. This system helps the administrators to reduce the paper work and to eliminate manual processes and to save time and work.

College Automation System is helpful to both the students and the of the college. This System is capable of storing the details of the students and the teachers and also maintain their details in order.

This can help us explore all the activities happening inside the college which we as students do not have any knowledge about. It can handle and maintain the details of students, faculty easily. In this system the faculty can maintain every detail of a particular student in their class accurately. He can also post any notice corresponding to his class easily and based on attendance, grant a student attendance and allowance to appear for the examination.

It reduces the use of paper work and man power. This system is very helpful as to generates a overall report of every class attendance systematically. Through this faculty to easily find out defaulters in a few clicks.

It maintains the attendance records in a large database instead of maintaining register which is useful to get particular record of each student easily. Staff can get defaulter's list of a particular student with in few seconds.

The system provides a manageable and systematic reports of maintain attendance records. It reduces and saves time, cost and campus resources with easy maintenance.

Our project deals with the functions of various campus management process. To develop the activities of campus administration this campus automation is very helpful. It is used to implement the proper process of system. Campus automation is not only useful for the digital works but also useful for external works such as automatic sensors of light, fans and also for the prevent for the accidents occurred due to fire through sensing and alerting to the administration. Our project helps us to prevent and sort this kind of problem.

In this project of "Campus automation system" is for development of the campus in modern way in order to simplify the work effectively and save the time and also prevents the campus from various damages.

METHODOLOGY

The project "Campus Automation" is the automation of college premises. In this automation system, we proposed the Campus Automation System designed with water management system to reduce water wastage of the over head tank, fire sensor to provide

DESIGN AND ANALYSIS OF MODIFIED STEPPED IMPEDANCE LOW PASS FILTER WITH 2.4 GHz UPPER CUT-OFF FREQUENCY

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ABSTRACT:

In recent days the demand for wireless communication is increased so RF units are require optimization in Radio frequency (RF) front end circuits. In general this RF front end section consist antenna, RF filter, Low noise amplifier (LNA), power amplifier (PA), etc., In this front end system RF filter plays an important role in selection of required band frequencies by suppressing unwanted frequencies. In this project, a Microstrip Low Pass filter (MS-LPF) is proposed and the design is based on stepped impedance structure. The proposed filter is operated with higher frequency at 2.4 GHz that covers two ISM Band and s- band applications. An FR4 substrate is used in the design of MS-LPF. Commercial software HFSS is used to design and its simulation. The simulation result shows transmission loss, return loss.

1.INTRODUCTION

Radio frequency (RF) front-end is the core of wireless communication, where the filter plays an important role in RF front-end. With the technological increasingly developments of wireless communication system, the filter needs to meet higher requirements, such as smaller size, lighter weight and lower cost. However, the traditional metal filters cannot achieve these requirements well due to their characteristics of easy corrosion, high loss and limited resource.

2.LITERATURE SURVEY

A filter that allows low frequency signals and rejects high frequency signals and transmits low frequency signals from the input to the output port with less attenuation is called low pass filter. However, attenuation increases with the amplitude-reduced signal as frequency exceeds certain cut-off point. The real amount of attenuation for each frequency changes from filter to filter. A low-pass filter is the opposite of a high-pass filter, and band-pass filter is a combination of a low-pass and a high-pass filter. Low-pass filters are applied in many different forms such as audio applications, acoustic barriers, electronic circuits, blurring of images etc. Low-Pass filters are used in huge amount in many millimeter-wave and microwave systems to pass the desired low frequencies below cut-off and reject the higher frequencies. A microstrip low-pass filter has many useful properties like very low insertion loss, easy fabrication and compact size. Hence, it has increased applications in microwave circuits and mobile communication. Filters are required to have large return loss and small insertion loss for good impedance matching to prevent interference . For this filter design, microstrip line is a good transmission line due to advantages of light

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COMMON COUPLED FIXED POINTS OF GENERALIZED CONTRACTION MAPS IN b-METRIC SPACES

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Abstract. In this paper, we introduce generalized contraction condition for two pairs (F, f) and (G, g) of maps $F, G : X \times X \to X, f, g : X \to X$ where X is a b-metric space and prove the existence and uniqueness of common coupled fixed points of these two pairs under the assumptions that these pairs are w-compatible and satisfying generalized contraction condition by restricting the completeness of X to its subspace. We draw some corollaries from our main results and provide examples in support of our results.

1. Introduction

The main idea of b-metric was initiated from the works of Bourbaki [8] and Bakhtin [4]. The concept of b-metric space or metric type space was introduced by Czerwik [9] as a generalization of metric space. Afterwards, many authors studied fixed point theorems for single-valued and multi-valued mappings in b-metric spaces, for more information we refer [3, 6, 7, 10, 14, 15, 19].

In 2006, Bhaskar and Lakshmikantham [5] introduced the notion of coupled fixed point and established the existence of coupled fixed points for mixed monotone mappings in ordered metric spaces. Later, Lakshmikantham and Ćirić [16] introduced the notion of coupled coincidence points of mappings in two variables. Afterwards, many authors studied coupled fixed point theorems, we refer [11, 16, 17, 20, 21].

Definition 1.1. [9] Let X be a non-empty set. A function $d : X \times X \to [0, \infty)$ is said to be a b-metric if the following conditions are satisfied: for any $x, y, z \in X$

(i) $0 \leq d(x, y)$ and $d(x, y) = 0$ if and only if $x = y$,
(ii) $d(x, y) = d(y, x)$,
(iii) there exists $s \geq 1$ such that $d(x, z) \leq s[d(x, y) + d(y, z)]$.

In this case, the pair (X, d) is called a b-metric space with coefficient s.

Every metric space is a b-metric space with $s = 1$. In general, every b-metric space is not a metric space.

Definition 1.2. [7] Let (X, d) be a b-metric space.

(i) A sequence $\{x_n\}$ in X is called b-convergent if there exists $x \in X$ such that

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COMMON FIXED POINTS OF TWO PAIRS OF SELFMAPS SATISFYING A GERAGHTY-BERINDE TYPE CONTRACTION CONDITION IN b-METRIC SPACES

K.BHANU CHANDER AND T.V. PRADEEP KUMAR

Abstract. In this paper, we introduce Geraghty-Berinde type contraction for two pairs of selfmaps in b-metric spaces and we prove the existence of common fixed points under the assumptions that these two pairs of maps are weakly compatible and satisfying a Geraghty-Berinde type contraction condition in complete b-metric spaces. The same is extended to a sequence of selfmaps. Also, we prove the same with different hypotheses on two pairs of selfmaps in which one pair is compatible, reciprocally continuous and the other one is weakly compatible. Further, we also prove the same with different hypotheses on two pairs in which these selfmaps are satisfy b-(E.A)-property. We also discuss the importance of L in our contraction condition. Our theorems extend/generalize some of the results in literature to two pairs of self maps.

1. Introduction

The development of fixed point theory is based on the generalization of contraction conditions in one direction or/and generalization of ambient spaces of the operator under consideration on the other. Banach contraction principle plays an important role in solving nonlinear equations and it is one of the most useful result in fixed point theory. In the direction of generalization of contraction conditions, in 1973, Geraghty [22] proved a fixed point theorem, generalizing Banach contraction principle. Several authors proved later various results using Geraghty-type conditions. In continuation to the extensions of contraction maps, Berinde [13] introduced 'weak contractions' as a generalization of contraction maps. Berinde renamed 'weak contractions' as 'almost contractions' in his later work [14]. For more works on almost contractions and its generalizations, we refer Babu, Sandhya and Kameswari [10], Abbas, Babu and Alemayehu [2] and the related references cited in these papers.

The main idea of b-metric was initiated from the works of Bourbaki [17] and Bakhtin [12]. The concept of b-metric space or metric type space was introduced by Czerwik [18] as a generalization of metric space. Afterwards, many authors studied

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Key words and phrases. Common fixed points, complete b-metric space, b-(E.A)-property, weakly compatible maps, reciprocally continuous maps.
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COMMON FIXED POINTS OF A PAIR OF SUZUKI $\mathcal{Z}$-CONTRACTION TYPE MAPS IN b-METRIC SPACES

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Abstract: In this paper, we introduce Suzuki $\mathcal{Z}$-contraction type (I) maps, Suzuki $\mathcal{Z}$-contraction type (II) maps, for a pair of selfmaps in b-metric spaces and prove the existence and uniqueness of common fixed points. We draw some corollaries to our results and provide examples in support of our results.

Keywords and Phrases: Common fixed point, b-metric space, b-continuous, Suzuki $\mathcal{Z}$-contraction type maps.

2020 Mathematics Subject Classification: 47H10, 54H25.

1. Introduction

Nonlinear analysis plays an important role in many branches of Applied Sciences, for latest works, we refer [13, 20, 24, 25, 26]. Particularly, fixed point theory is a part of nonlinear analysis and its development depends on the generalization of contraction conditions or/and generalization of ambient spaces of the operator under consideration. In 1975, Dass and Gupta [12] established fixed point results using contraction condition involving rational expressions and proved the existence of fixed points in complete metric spaces. In 2008, Suzuki [28] proved two fixed

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Vitamin C assisted synthesis of rGO–Ag/PANI nanocomposites for improved photocatalytic degradation of pharmaceutical wastes†

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A highly efficient visible light active polyaniline (PANI)/Ag composites grafted reduced graphene oxide (rGO–Ag/PANI) was prepared for the efficient photocatalytic degradation of paracetamol. The structural, morphological, and light absorption properties of the as-synthesized rGO–Ag/PANI were characterized by UV-Visible (UV-Vis) spectroscopy, Fourier transform infrared (FTIR) spectroscopy, powder X-ray diffraction (XRD), scanning electron microscopy (SEM), and transmission electron microscopy (TEM). Paracetamol was taken as a model water pollutant to investigate the photocatalytic degradation efficiency of the rGO–PANI/Ag nanocomposites under visible light radiation. The result shows the degradation of paracetamol to be 99.6% in the acidic medium (pH 5) and 75.76% in the basic medium (pH 9), respectively. The enhanced degradation efficiency is attributed to the synergetic effect of rGO, PANI, and Ag NPs in the nanocomposites. This synergy of the rGO–Ag/PANI is explained by the strong adsorption efficiency, charge separation, and light absorption in the visible region.

1 Introduction

During the last decade, water pollutants emerging from pharmaceutical, cosmetics, heavy metals, pesticides, industrial additives, and solvents are becoming new global water quality threats. Even trace level of a pharmaceutical drug in water has considerable health impact on the humans, animals, and aquatic species.[1,2] The presence of pharmaceuticals in municipal wastewater, hospital wastes, and industrial effluents are the major sources of contaminants in drinking water.[3] Particularly, paracetamol (chemically known as acetaminophen, 4-hydroxyacetanilide, 4-acetamidephenol or APAP) is one of the most common drugs used in the world as an analgesic and antipyretic drug.[4] Paracetamol is highly accumulated in the aquatic environment and show adverse effects on the aquatic life and human health.[4] Therefore, it is highly desirable to remove or reduce the paracetamol concentration below the recommended level before being discharged to the water bodies.

Many methods, such as chemical treatment, filtration, activated sludge, reverse osmosis, electrocoagulation, and advanced oxidation process, have been employed for the removal of paracetamol from contaminated water.[5–8] Among the advanced oxidation (AO) processes, light-driven photocatalytic degradation has received considerable attention due to its cost-effectiveness, eco-friendly nature, and the absence of residual secondary pollutants.[9,10] Therefore, the modification or synthesis of novel photocatalysts for this purpose is a prime concern in the field of AO. In this regard, multiple reports on the graphene-based multifunctional nanocomposites have been published for the photocatalytic degradation of water pollutants.[11,12] Reduced graphene oxide (rGO) is a two-dimensional structure with strong suitability for electron delocalization and astonishing physicochemical properties prioritizing it for preparing nanocomposites.[13] rGO supported metal/metal oxide nanoparticles have shown enhanced photocatalytic activity than their pristine form.[14] Moreover, rGO blended with conducting polymers such as polyaniline (PANI) has been reported for the synergistic photocatalytic degradation of organic compounds.[15]

Polyaniline (PANI), among other conducting polymers, has shown promise for various technological applications because it adapts a facile preparation protocol, and shows interesting electrical conductivity, chemical stability, and catalytic properties.[16,17] Furthermore, by doping or making composites with inorganic materials, the conductivity and catalytic properties of PANI can be enhanced. For example, Ma *et al.*[18] have reported TiO_2 modified rGO–PANI hybrid for the efficient photocatalytic removal of organic dye and production of hydrogen. This enhanced photocatalytic efficiency of the composite is ascribed to the extended spectral response in the visible region and

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† Electronic supplementary information (ESI) available: Preparation of graphene oxide protocol, detail UV-Vis absorption spectrum of paracetamol at different degradation conditions. See DOI: 10.1039/d1ra00171j

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Original Paper

Nd^{3+}-Doped Lead Boro Selenate Glass: A New Efficient System for Near-Infrared 1.06 μm Laser Emission

Pathuri Naresh, Marek Kostrzewa, Mikhail G. Brik, Annapureddy Siva Sesha Reddy, Nutakki Krishna Mohan, Vandana Ravi Kumar, Michal Piasecki, Nalluri Veeraiah

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Abstract

An exotic series of glasses with the composition 39PbO—(60–x)B_2O_3–$x$$SeO_2$:1.0 Nd_2O_3 ($10 \le x \le 50$) is prepared and characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), and energy dispersive X-ray spectroscopy (EDS) techniques. Results of infrared (IR), Raman, and X-ray photoelectron spectroscopy (XPS) studies reveal that the glass network comprises quarantined selenite $[SeO_3]^{2-}$ groups (that act as modifiers) and selenate $[SeO_4]^{2-}$ groups in addition to BO_3 and BO_4 units. With the increase in SeO_2 content, the concentration of selenite groups is found to be dominant. The optical absorption (OA) spectra exhibit several bands due to $^4I_{9/2} \rightarrow {}^2P_{1/2}$, $^2G_{9/2}$, $^4G_{9/2,7/2,5/2}$, $^2H_{11/2}$, and $^4F_{9/2,\ 7/2,5/2,3/2}$ transitions. The spectra are characterized using J–O theory and J–O parameters are found to follow the order: $\Omega_2 > \Omega_6 > \Omega_4$. The emission spectra recorded at $\lambda_{exc} = 808$ nm exhibit bands due to $^4F_{3/2} \rightarrow {}^4I_{9/2}$, $^4I_{11/2}$, and $^4I_{13/2}$ transitions. With increase in SeO_2 content, intensity of all emission bands significantly increases. The quantum efficiency evaluated from the measured and calculated lifetimes of the $^4F_{3/2} \rightarrow {}^4I_{11/2}$ transition is found to be enhanced by 20% with increase in SeO_2 from 10 to 50 mol%. The spectra are further analyzed quantitatively using kinetic rate equations of various excited levels and the reasons for enhancement of photoluminescence (PL) emission are identified and discussed.

Conflict of Interest

The authors declare no conflict of interest.

Physica B: Condensed Matter
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Studies on near infrared emission of Yb^{3+} ions in a SeO_2 based glass system

Pathuri Naresh [a, b], Valluri Ravi Kumar [c], A. Siva Sesha Reddy [a], M. Kostrzewa [d] ✉, N. Venkatramaiah [e], N. Krishna Mohan [f], V. Ravi Kumar [a], N. Veeraiah [a] ✉

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https://doi.org/10.1016/j.physb.2021.412827

Abstract

SeO_2 based glasses of the composition 39 PbO–(60-x) B_2O_3– $xSeO_2$:1.0 Yb_2O_3 (with $10 \le x \le 50$) was synthesized. Analysis of the results of structural studies of the samples revealed that the glass network consists of $[SeO_4]^{2-}$ and $[SeO_3]^{2-}$ units; the studies further indicated an increasing fraction of $[SeO_3]^{2-}$ units and decreasing concentration of $[SeO_4]^{2-}$ groups with increase of SeO_2 content. Optical Absorption (OA) and photoluminescence (PL) spectra have exhibited bands due to $^2F_{7/2} \rightarrow {}^2F_{5/2}$ and $^2F_{5/2} \rightarrow {}^2F_{7/2}$ transitions, respectively. Evaluated absorption and emission cross-sections and lifetime of the excited state of Yb^{3+} ions exhibited an increase with increase of SeO_2 content. Results of PL studies indicated nearly fourfold increase of PL output with increase of SeO_2 content up to 50%. Such increase is attributed to the increased concentration of isolated $[SeO_3]^{2-}$ pyramidal groups. Overall, the rise of SeO_2 content in Yb^{3+} doped PbO–B_2O_3–SeO_2 glass system facilitated the increase of PL emission of Yb^{3+} ions largely.

Previous Next

Keywords

SeO_2 based glass system; Yb^{3+} ions; 1.0 μm emission; Emission and absorption cross-sections

ScienceDirect

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Emission features of Er^{3+} ions in an exotic SeO_2 based glass system

Pathuri Naresh [a, b], M. Kostrzewa [c] ✉, M.G. Brik [d], N. Venkatramaiah [e], Valluri Ravi Kumar [f], N. Krishna Mohan [g], V. Ravi Kumar [a], M. Piasecki [h], N. Veeraiah [a] ✉

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https://doi.org/10.1016/j.jnoncrysol.2020.120558

Highlights

- SeO_2 based glasses of composition 39PbO-(60-*x*)B_2O_3-*x*SeO_2:1.0 Er_2O_3 were synthesized.
- IR/Raman spectra suggested growth of $[SeO_3]^{2-}$/$[SeO_4]^{2-}$ units' ratio with SeO_2 content.
- Analysis of OA spectra indicated J-O parameters to follow the order: $\Omega_2 > \Omega_6 > \Omega_4$.
- Green and NIR PL emission bands exhibited significant growth with SeO_2 content.
- PL spectra quantitatively analysed using kinetic rate equations.
- Gain co-efficient G(λ) of $^4I_{13/2} \rightarrow {}^4I_{15/2}$ transition indicated its lasing behaviour.

Abstract

In this work we have studied impact of SeO_2 concentration on luminescence properties of 39PbO-(60-*x*)B_2O_3-*x*SeO_2:1.0 Er_2O_3 ($10 \le x \le 50$) glass system. The structural analysis of the samples carried out by XRD, SEM indicated that the prepared samples are in amorphous phase. IR, Raman and XPS studies revealed increasing presence of isolated selenite $[SeO_3]^{2-}$groups and decreasing concentration of $[SeO_4]^{2-}$(selenate) groups with increasing content of SeO_2 in the glass network. Optical absorption (OA) spectra revealed absorption bands due to $^4I_{15/2} \rightarrow {}^4F_{7/2,\ 9/2}, {}^2H_{11/2}, {}^4S_{3/2}, {}^4I_{9/2,\ 11/2,\ 13/2}$ transitions of Er^{3+} ions. Using J-O theory, the spectra were characterized and the evaluated Ω_λ parameters are found to be in the order: $\Omega_2 > \Omega_4 > \Omega_6$. The PL spectra recorded at λ_{exc}= 378 nm exhibited the emission bands due to $^2H_{11/2} \rightarrow {}^4I_{15/2}$ (B), $S_{3/2} \rightarrow {}^4I_{15/2}$(G), $^4F_{9/2} \rightarrow {}^4I_{15/2}$(O) and $^4I_{13/2} \rightarrow {}^4I_{15/2}$ (NIR) transitionsof Er^{3+} ions. With the gradual increase SeO_2 content, the PL emission bands (especially green and NIR bands) have exhibited significant growth. The spectra were quantitatively

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Spectroscopic features of chromium ions in Li_2O-BaO-B_2O_3 glasses

M. Nagarjuna [a], P. Naresh [b], P. Naresh [c], M. Srinivasa Reddy [d] ✉, N. Veeraiah [e]

https://doi.org/10.1016/j.matpr.2021.01.369

Abstract

Li_2O-BaO-B_2O_3: Cr_2O_3 glass samples were prepared by adapting the Melt-quenching method. The pre prepared glass samples were characterized by the XRD and confirm the amorphous nature of the samples. Various physical parameters were estimated employing experimental densities and refractive index. The bands observed in the Optical absorption spectra were assigned and described based on the electronic transitions by using the TS diagrams. Crystal field (D_q) and Racah parameters (B and C) were calculated by the crystal field relations. Direct and Indirect optical band gaps were evaluated using Davis and Mott relation from the absorption edges. Correlate these results with Infrared and ESR studies. Finally, discussed the structural behavior of the Chromium ions in Li_2O-BaO-B_2O_3glass samples was analyzed.

Previous Next

Keywords

Glasses; Chromium ions; Optical absorption; Infrared spectra; ESR spectra

Special issue articles Recommended articles

An Agile Methodology at Telecommunications Morpho

[1]K.Sudhakar, [2]Dr.A.Pathanjali Sastri, [3]Prof D Durgaprasad

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***Abstract*: It is winding up clear, not minimum from the pages of this distribution, that lithe advancement strategies are being embraced or possibly considered by a developing number of programming improvement groups and associations. Regardless of whether you are as of now a functioning specialist coordinated advancement, or thinking about its appropriation on your venture, you will know about the business benefits that can be determined through quicker and increasingly powerful programming conveyance also the persuasive effect it can have on improvement groups. On the other hand, possibly you work for a substantial association that presently can't seem to make any genuine advances into dexterous improvement and are left considering how deftness could be made to chip away at a vast scale. In case you are in the last camp, or regardless of whether you are not effectively thinking about spry improvement in that capacity but rather are attempting to convey expansive and/or complex projects utilizing customary methodologies and wishing there was a superior way, at that point you are most likely where British Telecom (BT)[1] wound up in 2004. That was previously the landing in the organization of another CIO[2] who methodically started supplanting the organization's long-standing cascade-based conveyance forms with one that encapsulated the key standards of nimble conveyance. This article shows a review of the methodology taken by BT, outlining how light-footed advancement standards can be connected effectively at the venture level. Obviously, the methodology taken by BT isn't for the timid – it has incorporated a high level of hazard, and surely a great deal of torment. Presently very much into its second year be that as it may, even though the change is a long way from finish, it is as of now paying profits.**

Index Terms: DSDM, CMMI, and Big Design Up front (BDUF)

I. Introduction: BT utilizes about 8,000 IT experts in an assortment of jobs including venture and conveyance the executives, design, and structure, programming building, joining and testing, operational help and administration the board. A lot of its inside focused advancement work has generally been directed through various business-focused conveyance tasks or projects, extending from very little, straightforward improvements to substantial scale and complex business arrangements, the last tending to be the standard. The prevalent conveyance approach, surely for the bigger conveyance programs, was particularly cascade based. The utilization of deft improvement practice, outstandingly DSDM and Scrum[3], was constrained to few genuinely little, independent advancement groups. BT was in certainty one of the establishing individuals from the DSDM Consortium and took a functioning part in forming the strategy in its initial days. Regardless of effectively conveying various huge, complex arrangements into a dynamic, focused yet exceptionally controlled business condition, numerous critical change programs were attempting to convey any prominent outcomes in a worthy time span. As a feature of a CMMI-roused enhancement system[4], endeavors had been made to formalize recognized best practice forms into a standard conveyance strategy. In 2004, this standard philosophy was being taken off when the new CIO clarified that a completely new light-footed methodology was required.

a) Downsides of the cascade: Support of momentum cascade-based practices was not by any stretch of the imagination the appropriate response in any case. A significant number of the conveyance issues experienced at BT, and no uncertainty other expansive associations, originate from the idea of the cascade lifecycle itself. A few instances of these issues are given here. For an increasingly entire pulverization of cascade rehearses, allude to Craig Larman's phenomenal work [5].

b) Poor necessities to catch : Catching necessities positively is certainly not an awful thing. On common extensive projects, be that as it may, Singular business partners are on edge to join most of their known necessities into the first/next discharge "Gold clients" produce hundreds, if not a huge number of definite prerequisites that regularly bear little relationship to the business issues that should be tended to

c) Most if not all prerequisites are given a high need: The prerequisites themselves, best case scenario, speak to the present view, which will absolutely have changed when the necessities are really executed

d) Separated structure : Given the sheer number of necessities, the structure network ends up investing most if its energy endeavoring to make sense of what they mean. In the interim, the necessities investigators proceed onward to different tasks, taking with them critical implicit information. A few partners wind up worried that their prerequisites are not being sufficiently tended to, and in this manner decline to close the structures. Different partners uncover more prerequisites or raise change demands, occupying rare plan aptitude onto affect examinations

e) Advancement crush : With the plan organize having slipped, advancement groups wind up under extraordinary strain to convey segments into the incorporation condition by the initially concurred date. They regularly take the choice, reluctantly, to begin advancement against an insecure plan, as opposed to do nothing or redirect assets to different projects. Framework testing is stopped with the goal that unique timescales are met, and the program apparently is on target.

f) The coordination cerebral pain: The coordination group has a set number of weeks amid which it needs to incorporate what it hopes to be completely useful and generally sans bug code. Considering the unsteadiness of the part code, and the absence of any compelling relapse test capacity, exertion is rather redirected to attempting to determine rudimentary bugs in the conveyed code, liaising with an improvement group that is presently occupied with the following real discharge. Real combination thusly

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Research Article

A Hybrid Ensemble Feature Selection-based Segmentation and Deep Majority Voting Framework on Large Multi-class Diabetes Retinopathy Databases

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Abstract: Diabetic retinopathy is a micro vascular disease that induces a number of changes in the retina. Micro aneurysms, haemorrhage exudates, and the development of new blood vessels all alter the diameter of the blood vessel. Most of the conventional multi-class diabetes retinopathy has different issues such as problem of over-segmentation, classification precision, recall and error rate on high dimensional features space. Ensemble feature selection measures are used to filter the essential features in the large feature space. In this work, a hybrid ensemble feature selection based multiple classification models are used to improve the classification accuracy on multi-class diabetes retinopathy databases. In this work, a novel image segmentation, ensemble feature extraction measures, and multiple classification approaches are used to find the majority voting in the classification problem. Experimental results show that the proposed ensemble feature extraction-based voting classification model has better efficiency compared to the state of art of conventional approaches.

Keywords: Ensemble feature selection, deep learning, diabetes retinopathy

1. Introduction

Diabetes is a relatively common disease, but it can be made much simpler by using modern technology to separate the needed insulin from the available insulin. The victims of the crisis have had to endure high levels of sugar in their blood for long periods of time. In the event of the body not being able to meet the daily insulin requirements, the individual will suffer from diabetes. It is important to keep your eyes open in order to take care of other important things in the body **(S. Stolte and R. Fang 2020)**. The retina is the part of the eye that contains the photosensitive light-sensitive layer. Another important job of the retina is to convert light rays into electrical signals. These images are being constructed. Diabetic retinopathies assist in the recovery of retinal tissue It also reduces the amount of fluid in the eye is able to show, which reveals the hidden vision. Another of the many risk factors for this disease is age. When a disease is discovered in the early stage, there is a good chance of being able to cure it. Diabetic retinopathy is equally distributed between the eyes **(Q. Xie Sep. 2020)**. Cholesterol consumption and heavy smoking are major risk factors for this illness. Eventually, the entire veins in the eye are affected by this disease. In order to create new blood cells, the eyesight must be good. Almost all of the blood cells are in a resting state during this time. It is also known as diabetic retinopathy. Diabetic retinopathy shows up in the eyes as retinopathy. The best balance of sensitivity and specificity of all possible percentages, currently, was achieved here. Diabetic retinopathy is one of the many diabetes-related eye diseases, no fundus or retina images are used to identify the DR disease **(Y. Xie May 2020)**. To predict the DR, the majority of the ophthalmologist's uses only rely on standard techniques. Automatic disease prediction is rather cost-effective, but the population in rural areas must receive the benefits. Sensitivity and specificity are also calculated at each level of the Random Forest classifier and neural network level. Diabetic retinopathy was studied extensively in relation to vision loss among older patients with diabetes. This condition impairs the retina's ability to perform its normal function. Retinal is the tissue that is extremely sensitive to light. Prediction and early detection were employed to avert the loss of the eyesight **(A. Samanta, A. Saha, S. C. Satapathy, S. L. Fernandes and Y.-D. Zhang Jul. 2020)**. Most recent reports state that people all over the world have to contend with the new disease called 'diabetes.' In this study, artificial intelligence was used to carry out the disease diagnosis. Using the pre-processing concept on the input images suppresses noise. Using SVM, Navie Bayes, and LR Bayes are employed to classify the images before resizing. The result shows improved sensitivity, increased accuracy, and a decreased error rate Pre-processing and segmentation were used to discover DR in the human eye Initially, the optic nerve is made up of longitudinally segmented. The network was created using retinal micrographic imaging. If the retinal nerve field was small, the person would have either non-proliferative diabetic retinopathy or proliferative retinopathy (DR) **(W. Zhang Jul. 2019)**. Suppose there was no such connection between the portion of the nervous system and this disease. The funduscopic images are used to diagnose the disease and to assess the extent of the problem. Detection of the disease from a non-processed image is challenging A number of speakers volunteered their clinical and research data related to diabetic retinopathy, or Priya et al., who shared information about predicting retinopathy offered clinical and research data (DR). NPDR may be able to more accurately classify DLT: The study's authors may be able to divide NPDR into separate classifications for the sake of NPD: Non-proliferative

IIETA International Information and Engineering Technology Association
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A Novel Filtered Segmentation-Based Bayesian Deep Neural Network Framework on Large Diabetic Retinopathy Databases

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Keywords:
diabetic retinopathy, feature ranking, Bayesian classification, deep neural network

ABSTRACT

Image thresholding-based segmentation models play a vital role in the detection of Diabetic retinopathy (DR) on large databases. Most of the conventional segmentation-based classification models are independent of over segmented regions and outliers. Also, these models have less true positive rate and high error rate on different DR feature sets. In order to overcome these problems, a novel filtered based segmentation framework is designed and implemented on the large DR feature space. In this work, a novel image filtering approach, optimal image segmentation approach and hybrid Bayesian deep learning framework are developed on the large DR image databases. Experimental results proved that the proposed filtered segmentation-based Bayesian deep neural network has better accuracy and runtime than the conventional models on different DR variation databases.

1. INTRODUCTION

Diabetic retinopathy is eye disease that causes retinal nerve hemorrhage in the eye that indicates loss of vision. The small blood vessels of the retina damage retinopathy, which causes a significant loss of view. It is estimated by the National Eyo Institute that 40% to 45% of American diabetics become blind every year by diabetes retinopathy [1]. Diabetes retinopathy symptoms do not appear until the retinal vision, normally by partial vision, has been visually damaged. Consistent eye screening is therefore necessary for early diagnosis and treatment before significant damage to the retina is caused because the risk of blindness in these patients may be reduced by 50%. Early detection of DR allows laser therapy to stop or delay visual loss and can help improve the diabetic control. An automatic diabetic retinopathy detection and therapy at an early stage can thus prevent blindness [2]. Caused mostly for diabetic patients, retinopathy is diabetic. For the extraction of diabetic retinopathy diseases, this study makes image segmentation [3]. Diabetes is a disease in which glucose metabolism abnormalities lead to increased blood glucose levels. One of the prominent complications caused by prolonged diabetes is diabetic retinopathy [4]. The percentage of globally diabetes-affected population is growing at an alarming rate. The global prevalence of diabetes is expected to rise from 130 million to 300 million in the next two decades, according to World Health Organization reports [5]. Prolonged diabetes affects the retinal vasculature and ultimately results in Diabetic Retinopathy (DR) and subsequent vision loss. DR complications and subsequent blindness can be moderated if periodic screenings detect the DR early enough. According to UK surveys, early detection of DR by periodic diabetic patient retinal screening may reduce the risk of blindness in these patients by 50% [6]. The potential ability of computerized algorithms and automated systems to show diabetic retinopathy or absence during periodic screening programs.

High dimensionality is a major issue where a large number of training features are processed to perform mathematical operations such as transformation of data, classification of data, etc. Traditional dimensionality reduction techniques are implemented using the same and defined number of features to reduce the number of dimensions. Ensemble classification models are used to predict the high dimensional features with less error rate in the specified training datasets. Through learning model of an ensemble combines multiple base classifiers to boost the accuracy compared to its individual prediction score.

Artificial neural network typically has three layered architecture for data classification, such as input layer, hidden layer, and output layer. Scientists have made tremendous efforts in recent years to improve the architecture of networks and learning models based on basic ANN [7]. But in the neural network setting, the major challenge is choosing the correct activation function using the logistic and hyperbolic functions. Since the proper activation function selection improves the classification rate on the high dimensional datasets.

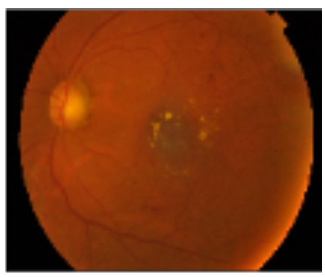

Figure 1. Different variation in diabetic retinopathy image for classification

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Wasserstein GANs for Generation of Variated Image Dataset Synthesis

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Abstract

Deep learning networks required a training lot of data to get to better accuracy. Given the limited amount of data for many problems, we understand the requirement for creating the image data with the existing sample space. For many years the different technique was used to develop data fixtures to improve modelling and training efficiently with the advent of GAN we were now able to get close to real data. However, the standard GANs require a lot of effort in training and not cost-efficient. A more practical way of training GANs is Wasserstein GAN. They can be used for efficient generating for data taking the training sample space. Better representation GANs with WGANS solved the problem of learning a probability density. In this paper, we now use WGANs for classification training data given the sample data. We intend to deal with the following objectives. (a)To consider the sample space for the training data to mock with WGAN. (b)To build WGAN in combination with the network for classification and evaluating the models' performance. (c)To compare WGAN and standard GAN for knowing the increased accuracy of the classifier.

Keywords: *WGANs, GANs Deep Learning, Machine Learning, Image Synthesis*

1. Introduction and Literature Review

Generative Adversarial Networks had produced state of the art results in several generative tasks for replicating data such as image generation, human language understanding, music composition and many more. These were first introduced by Ian Goodfellow back in 2014, in his research titled "Generative Adversarial Nets" [1]. Later, several architectures were introduced and experimented with GANs to make generative tasks more productive. The core logic behind GANs is inspired by game theory; hence, these are sometimes referred to as zero-game network architecture.

Unlike prevalent Deep Learning models like Convolutional Neural Networks (CNNs) as well as Recurrent Neural Networks (RNNs), GANs are built using two different architectures which are known as Generator Network (Z) and Discriminator Network (X). The objective of a network generator is to generate novel data, while the discriminator network classifies if the data is since the training data (real data) or the fake ones. Zero-sum logic is utilized for training these two adversarial networks, until the discriminator model is deceived, meaning

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Control Strategies of SAF for Different Operating Conditions

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Abstract: This paper describes three-phase three-wire Shunt active power filter using conventional three leg voltage source converter. In this paper two control strategies are compared. These strategies are Constant Instantaneous Power Theory, Generalized Fryze Current Control Theory. The performance analyses of Shunt Active Power Filter for Different Loads and for Different Supply (Balanced as well as Unbalanced) condition are simulated using Matlab.

Keyword— Shunt Active Power Filter (SAPF), Instant reactive power theory, Generalized Fryze Current control theory (FRYZE).

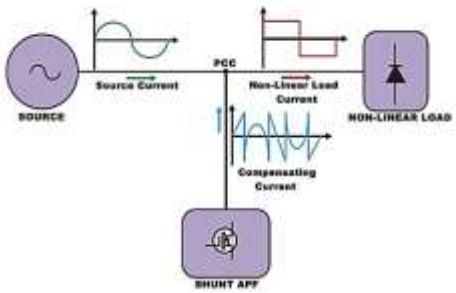
I. INTRODUCTION

The power quality issues have become an increasing concern in distribution system[1] due to the wide applications of sensitive load and disturbances. Poor power quality results in power disruption for the user and huge economic losses due to the interruption of production processes. Various power filtering technology i.e., passive filters, active power filters, hybrid filters have applied from time to time for giving the solution of power quality problems to users but could not fully satisfied them. Passive Filters are overloaded because of high degree harmonic. More filters are required for compensation because one filter can compensate only one particular frequency, and this Increases the cost of the filters [2]. The most effective solution is to use Active Power Filters which are able to compensate not only harmonics but also improve power factor and voltage regulation under different loads and unbalanced supply condition [2].

II. SHUNT ACTIVE POWER FILTER

Principle of operation

The shunt active filter shown in Fig. 1 is a current controlled voltage source inverter (VSI), which is connected in parallel with the load. It is controlled in such a way to generate the required reactive and harmonic currents of the load. SAPF injects a current equal in magnitude but in phase opposition to harmonic current. In this case the SAPF operates as a current source injecting the harmonic components generated by the load, but phase shifted by 180°. This principle is applicable to any type of load considered a harmonic source. Moreover, with an appropriate control scheme, the SAPF can also compensate the load power factor [8-12]. In this way, the power distribution system sees the nonlinear load and the active power filter as an ideal resistor. It is controlled to draw / supply a compensating current i c from / to the utility, so that it cancels current harmonics on the AC side and makes the source current in phase with the source voltage.



III. CONTROL STRATEGIES

a. Instant reactive power theory

Meta Data Management and its governance using Big Data Tools

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Abstract:- Todays deal is to deal with data, the data evolved from binary digit(bit) to Yottabyte and beyond in all aspects of science, arts, engineering, research especially life with so much of competition and concrete proof of knowledge to deal with it. In the point of database aces, the knowledge of the data took another leap of escalation which is Metadata management. The organizations are in trauma and not able to protect their data for the goodness and beneficial to the people and society. The vast amount of data is on the road and running like a bee with busy wings. The Meta data and its major flying beings are more important than any other base on the earth and also for the entire universe.

Key words:- *metadata, data management, components of metadata, initiatives of metadata*

I. INTRODUCTION

Since the day, the Binary Information Digit was instituted in the labs in 1947 by John W Tukey at Bell Labs[1], its has become the residue of each inhale on the earth. Each human is presently articulating the word information by asking, making, erasing, moving, and gathering a lot of its assorted expansion. India with its immense history of science and innovation is presently managing the advantages and disadvantages of enormous information like its populace in the nation and attempting to get things directly by applying the extern to each factor of existing and advanced models of training, administration and sanitization of the framework. [2]The cycle development from bit to Yottabyte (1024 Zettabytes) is the more seized rail framework where the excursion detracting from the gravitational power of everything identified with the humanity.

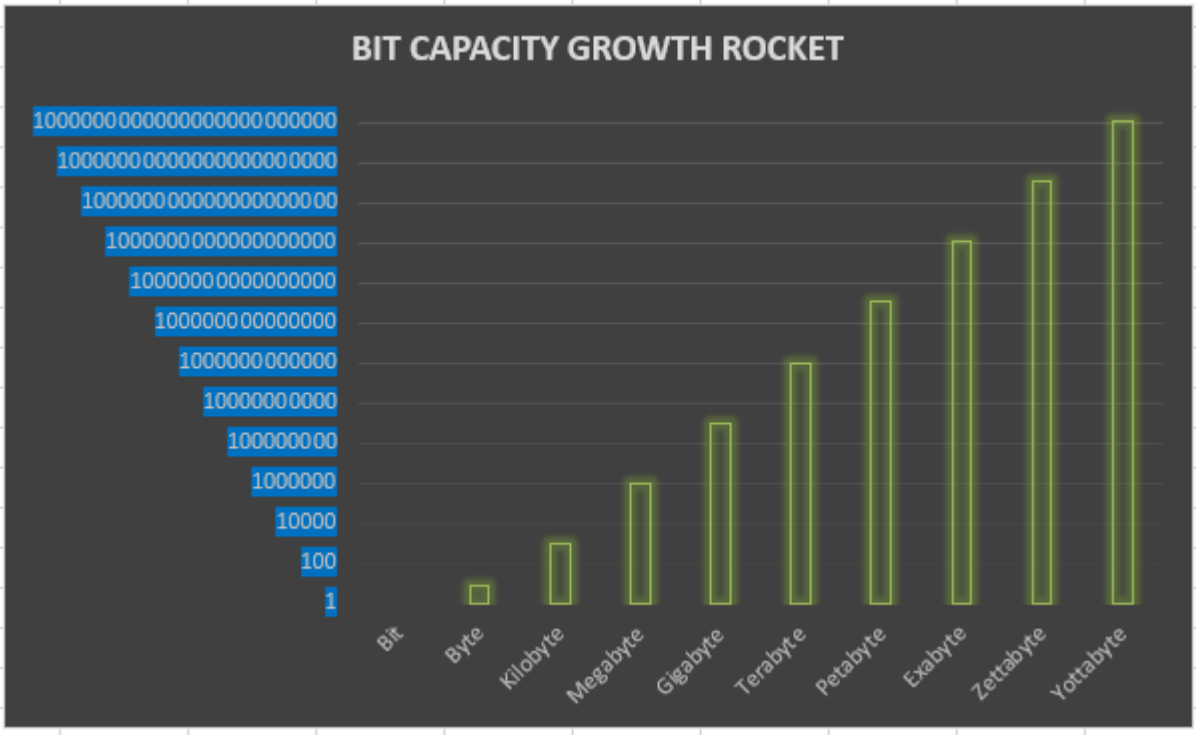

Figure 1.1: Bit limit rate development and its expansion

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Empirical View Of Financial Management Survey In Block Chain Technology Issues, Risk And Mitigation

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Abstract -A blockchain is simply a shared database of information or public ledger of all completed and shared transactions or digital activities between cooperating occurrences. Each transaction in the public ledger is confirmed by a majority of the participants within the device. Data cannot be removed once it has been input. The blockchain is a secure and verifiable record of every single transaction ever made. The most popular example of blockchain generation is Bitcoin, a decentralize dpeer-to-peer digital currency. Although the virtual foreign currency bitcoin is debatable, the blockchain technology that underpins it has performed admirably. The main hypothesis is that the blockchain creates a system for reaching a distributed consensus in the virtual online world. By developing an irrefutable file in a public ledger, participating entities may be certain that avirtual event occurred. It paves the way for the development of a democratic, open, and scalable digital economy from a centralised one. This disruptive period offers incredible prospects, and the change in this field has only just begun. The blockchain age is described in this white paper, as well as some intriguing specific applications in the monetary and non-financial sectors. We then research the difficulties ahead of time as well as the commercial opportunities in this critical age.

Keywords:Blockchain, Chain cods, Risk, Issues, Mitigation

An Agile Methodology at Telecommunications Morpho

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***Abstract*: It is winding up clear, not minimum from the pages of this distribution, that lithe advancement strategies are being embraced or possibly considered by a developing number of programming improvement groups and associations. Regardless of whether you are as of now a functioning specialist coordinated advancement, or thinking about its appropriation on your venture, you will know about the business benefits that can be determined through quicker and increasingly powerful programming conveyance also the persuasive effect it can have on improvement groups. On the other hand, possibly you work for a substantial association that presently can't seem to make any genuine advances into dexterous improvement and are left considering how deftness could be made to chip away at a vast scale. In case you are in the last camp, or regardless of whether you are not effectively thinking about spry improvement in that capacity but rather are attempting to convey expansive and/or complex projects utilizing customary methodologies and wishing there was a superior way, at that point you are most likely where British Telecom (BT)[1] wound up in 2004. That was previously the landing in the organization of another CIO[2] who methodically started supplanting the organization's long-standing cascade-based conveyance forms with one that encapsulated the key standards of nimble conveyance. This article shows a review of the methodology taken by BT, outlining how light-footed advancement standards can be connected effectively at the venture level. Obviously, the methodology taken by BT isn't for the timid – it has incorporated a high level of hazard, and surely a great deal of torment. Presently very much into its second year be that as it may, even though the change is a long way from finish, it is as of now paying profits.**

Index Terms: DSDM, CMMI, and Big Design Up front (BDUF)

I. Introduction: BT utilizes about 8,000 IT experts in an assortment of jobs including venture and conveyance the executives, design, and structure, programming building, joining and testing, operational help and administration the board. A lot of its inside focused advancement work has generally been directed through various business-focused conveyance tasks or projects, extending from very little, straightforward improvements to substantial scale and complex business arrangements, the last tending to be the standard. The prevalent conveyance approach, surely for the bigger conveyance programs, was particularly cascade based. The utilization of deft improvement practice, outstandingly DSDM and Scrum[3], was constrained to few genuinely little, independent advancement groups. BT was in certainty one of the establishing individuals from the DSDM Consortium and took a functioning part in forming the strategy in its initial days. Regardless of effectively conveying various huge, complex arrangements into a dynamic, focused yet exceptionally controlled business condition, numerous critical change programs were attempting to convey any prominent outcomes in a worthy time span. As a feature of a CMMI-roused enhancement system[4], endeavors had been made to formalize recognized best practice forms into a standard conveyance strategy. In 2004, this standard philosophy was being taken off when the new CIO clarified that a completely new light-footed methodology was required.

a) Downsides of the cascade: Support of momentum cascade-based practices was not by any stretch of the imagination the appropriate response in any case. A significant number of the conveyance issues experienced at BT, and no uncertainty other expansive associations, originate from the idea of the cascade lifecycle itself. A few instances of these issues are given here. For an increasingly entire pulverization of cascade rehearses, allude to Craig Larman's phenomenal work [5].

b) Poor necessities to catch : Catching necessities positively is certainly not an awful thing. On common extensive projects, be that as it may, Singular business partners are on edge to join most of their known necessities into the first/next discharge "Gold clients" produce hundreds, if not a huge number of definite prerequisites that regularly bear little relationship to the business issues that should be tended to

c) Most if not all prerequisites are given a high need: The prerequisites themselves, best case scenario, speak to the present view, which will absolutely have changed when the necessities are really executed

d) Separated structure : Given the sheer number of necessities, the structure network ends up investing most if its energy endeavoring to make sense of what they mean. In the interim, the necessities investigators proceed onward to different tasks, taking with them critical implicit information. A few partners wind up worried that their prerequisites are not being sufficiently tended to, and in this manner decline to close the structures. Different partners uncover more prerequisites or raise change demands, occupying rare plan aptitude onto affect examinations

e) Advancement crush : With the plan organize having slipped, advancement groups wind up under extraordinary strain to convey segments into the incorporation condition by the initially concurred date. They regularly take the choice, reluctantly, to begin advancement against an insecure plan, as opposed to do nothing or redirect assets to different projects. Framework testing is stopped with the goal that unique timescales are met, and the program apparently is on target.

f) The coordination cerebral pain: The coordination group has a set number of weeks amid which it needs to incorporate what it hopes to be completely useful and generally sans bug code. Considering the unsteadiness of the part code, and the absence of any compelling relapse test capacity, exertion is rather redirected to attempting to determine rudimentary bugs in the conveyed code, liaising with an improvement group that is presently occupied with the following real discharge. Real combination thusly

An Effective Lossy Color Image Compression using Multi Transforms

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Abstract

Rapidly growing use of multimedia products in diagnosis is affected by insufficient network and computer storage, as most of these applications use images of large data size. Compression is also important for reducing the size of images, particularly at lower bit rates, and it helps to avoid the use of additional memory and bandwidth in cloud storage. Image compression is classified into two types: lossy compression and lossless compression. The lossy compression technique can be used for medical image diagnosis while maintaining decoded image quality and achieving a high compression ratio, thus increasing device efficiency and reducing network bandwidth for transmission. In this paper, we propose a novel lossy colour image compression approach based on multi transforms such as DWT, SWT, and curvelets. The proposed work focused on an image compression technique based on DWT interpolation of high frequency sub-bands, correction of high frequency sub-band estimation using SWT high frequency sub-band and curvelets and comparison of the resulting images to current lossy compression techniques. Multi transforms compressed images have a high compression rate while maintaining good image quality.

Keywords

DWT, SWT, Curvelets, Cycle Spinning, Sieving, Selective Threshold.

How To Cite This Article?

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A Hybrid Machine Learning Framework For Biomarkers Based ADNI Disease Prediction

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Abstract

In most of the real-time applications, machine learning algorithms are used to predict the Alzheimer's disease on high dimensional feature space. However, the condition of Alzheimer Dementia (AD) exponentially progresses due to lack of early intervention. Most of the traditional ADNI models are independent of image feature space and biomarkers due to high computational time and memory. In order to improve the disease prediction rate, this research work use multiple biomarkers for disease prediction on the ADNI training data. In this work, an improved CNN based feature selection method, a segmentation model and classification model are implemented on the large number of feature space and biomarkers. Current algorithms are tested and evaluated; an improved set feature selection method is proposed with re-sampling strategies. Experimental results proved that the present CNN feature selection-based segmentation and classification model has better prediction rate than the conventional models on high dimensional features.

1. Introduction

The most frequent form of dementia is Alzheimer's disease (AD), which is usually associated with the elderly (over 65). In the early stages of the disease, postulated treatments are more likely to be successful. Several studies have concluded and confirmed over recent years that 90 % of cases with validation according to neuro pathological standards can be diagnosed with exact diagnosis by clinical evaluation alone [1]. However, after a patient has been diagnosed, it can may have substantial loss of quality of life and the possibility of change or even deceleration of the progression of the disease. This is why it's important to diagnose dementia very early. Currently, several medications are licensed by the United State Administration of Food and Drug (FDA) for the treatment of persons with

An Effective Segmentation and modified Ada Boost CNN based classification model for Fabric Fault Detection system

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Abstract
By rapidly growing the production of fabrics in textile industry, fabric faults are most common slip-up in the fabric manufacturing process. Inspection of fabrics and finding defects in the fabrics are too difficult along with the speed of production. Fabric defect detection plays a major role in the quality control in textile industry. The major objective of our proposal is to produce the high quality fabrics in the shortest period of time using machine learning Techniques. By increasing the various data sets in the fabric fault detection, the conventional classification techniques are not able to produce the accuracy on predicting the fault with low inspection time. To improve the accuracy and to predict the fabric defect within the inspection time, we propose An Effective Segmentation and modified Ada Boost CNN based classification model for Fabric Fault Detection System.

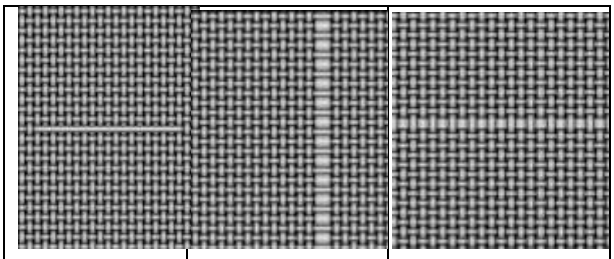
Keywords: *Ada Boost CNN, Morphological edge detection, Pre Processing.*

I. Introduction

Detection of defects on the fabric is very crucial part for the quality of the product. Now a days in textilemanufacturing industries defect detection is still depend on labor inspection. Inspectors will find out the defects in the fabric by direct observation, but extend observation will affect the human eyes and inspector will not able to find out the full defects on the fabric and not able to point out the mini defects on the fabric. In order to find out the mini defects on the fabrics we use classification technique. Classification is a technique which will divide the data in to number of classes to classify. In Machine learning son many classification techniques used to classify the fabric data in recent. Some of the most popular machine learning classification techniques 1. Kernel estimation (K-nearest neighbor (KNN)) 2. Linear Classifiers (Logistic regression, navie bayes classifier, Fisher's linear discriminant) 3. Support Vector Machine (SVM) 4. Decision trees (Random forests) is 5. Quadratic classifiers 6. Neural networks 7. Learning vector quantization. Up to now authors have used a K-nearest neighbors, learning vector optimization, Support vector machine, random forest, navie Bayes classifier, and linear classifiers.

An algorithm that maps the input data to a specific category. The data set may be simple data set or multiple data sets. There are so many data sets available for the fabric fault detection like TILDA data set we are using a textile defect detection master data set.

There was totally 70+ number of defects on the fabric they are horizontal lines, shade variation, Dirt stains, uneven dyeing, drop stitches, misprinting(off printing or absence of printing), crease marks, Barre, Neps/Knots, Abrasion marks, Splicing, Holes, Snags, Thick Place/thin place, Bowing and skewing, Needle lines, mixed lines, new lines, dirty or contaminated with lint, bent lines, worn lines, coarse pick, coarse end, broken pick or weft, broken end or warp, filling bar, missing end/end out, bad selvedge, loose warp,



Fabric Float defect	Fabric warp yarn defect	Fabric weft yarn defect

loose weft or snarl, double end, tight end, float of warp, Wrong end color, Miss pick, Double pick, Weft bar, Ball, Oil spot, Tails out, Temple mark, Reed mark, Slub, Thick, thin place, runner, sanforize pucker, puckered selvage, pin holes, open reed, needle line, broken pattern, iron marks, trails out, gout, neppy, pile less spot, bunching up , slough offend so on. Classification Techniques. In this paper proposed an efficient model to detect unseen and UN visible minor defects in the fabrics to improving the quality of a fabric with highest accuracy by using the Ada Boost Convolutional Neural Network and Image Segmentation techniques.

An Optimal Feature Selection Based Ensemble Classification Model to Predict AD Disease Pattern

I. Murali Krishna, Challa Narsimham, A. S. N. Chakravarthy

Abstract

In recent years machine learning acting an essential role in disease pattern classification role and the collection of numerical methods is proven the effectiveness of Alzheimer's disease prediction. Alzheimer's disease (AD) might be a neurodegenerative disorder of hesitant cause and pathogenesis that mainly affects older adults and is that the commonest details for dementia. The original clinical demonstration of AD is discriminating memory impairment and while treatments are accessible to advance some symptoms, there's no cure at present available. Machine learning algorithms are suitable and have gained major attention to classify the AD pattern. We offer a comprehensive synopsis and analysis of the foremost recent research on this topic. In recent years, many supervised classification models are applied and gain significant accuracy on classification, including both linear and Nonlinear SVM, Decision Tree, Random forest, Ada Boost models. The major intention of this article is early detection of the MCI and AD using machine learning classification models, including both supervised and unsupervised models. This paper proposed an optimistic feature selection-based Hybrid Ensemble classification model on ADNI and OASIS data sets to the early recognition of Alzheimer's disease severity. Experiment results are shown better efficiency than existing classifications models. The efficiency of the proposed model is in terms of accuracy, precession, recall, and f1-score.

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A SEMANTIC HEALTH OBSERVATION SYSTEM DEVELOPMENT BASED ON THE IOT SENSORS

20-21

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ABSTRACT

The Health observer system is playing important role in the modern medical field to monitor the pulse and heartbeat of the patients through a smart IoT technology-based system. A design of a semantic health observation system has been developed in this paper based on IoT sensors. Medical sensors are used to design the health monitoring system using IoT technology. Cloud servers are used to store the information related to the health observation system, which can be used to train with various data available and observed in different stages of the health observation. A massive amount of data will be collected from the IoT sensors and stored in the cloud to analyze the medical conditions. Based on the analysis of the medical conditions, the health condition of the patients will be predicted through the health condition analyzer. A mobile message and an email alert will be given to the patients or the guardians. The simulation results of the proposed IoT-based health observer show that the novel controller and processing procedure defined in the system improves the accuracy and reduces the cost and time.

I. INTRODUCTION

In modern world, people are facing severe problems suddenly, which leads to demise due to undiagnosed underlying health issues[1-3]. There, frequent health monitoring becomes prevalent and significant role in medical domain. To aid health monitoring of people in a remote basis to avoid hurry buries in treatment, the modern health care domain are engulfed science and knowledge based technologies with varieties of IoT based sensors [4-8]. These technologies ensures the appropriate direction of doctors at the needed time to avoid the death cases. In this kind of health care environment, patients wear various sensor such as heartbeat sensors, pressure-monitoring sensors to monitor their health status every seconds. With advancements in the electronics fields, many of the IoT sensors are low cost [9-12]. Hence, more number of patients used to wear various medicinal IoT sensors, which results in huge growth in sensor data produced by all these IoT sensors. These sensor data arrive at either TB or PB class. To keep track of sensed information, traditional storage mechanisms are not in position meet the requirements [13-16]. Cloud storage and computing is the evolved technologies to store this kind of information in a remote basis. This work makes use of HDFS (Hadoop Distributed File System) which handles large amount of information in the form of datasets running over a hardware [17-20]. The HDFS system are able to maintain both unstructured and semi structured data in an easier way. In order to handle

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Research Article

Design And Analysis Of An Efficientbit Based Object Detection

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Abstract: Video understanding can be viewed with useful contextual information in static cameras beyond a few seconds. Subjects may conduct similarly over a number of days and background objects remain static. The frequency of sampling is low, often less than a frame per second, and occasionally irregular because of the power and storage limitation of the motion trigger. If they are to be effective in this setting, models must be robust to irregular sampling rates. Users have developed a new range of EfficientDet Object detectors based on these optimizations and better backbones to improve efficiency over many resources compared to state-of-the-art. CentreNet is the highest speed-precision disruption in MS COCO at 28,1% CA for 142 FPS, 37,4% AP for 52 FPS and 45,1% AP for multi-scale tests with 1.4 FPS. We use the same approach to estimate the 3D border box in the KITTI benchmark and human position in the COCO keyboard dataset. With sophisticated multi-stage methods, our method works competitively and runs in real-time.

1. Introduction

Object detection enables several vision tasks, such as segmentation of instances, tracking estimates and recognition of actions. It has downstream monitoring and autonomous driving applications and answers to visual questions [1]. Current object detectors represent every object in a bounded axis, which closely covers the objects. They reduce object detection by a vast range of potential object bounding boxes in the image classification. The classifier determines for every bounding box whether the image contents are a particular object or background. The Onestage detectors cross the picture, classifying it directly by sliding through a complex set of possible bounding cases called anchors, without specifying its contents. Two-stage detectors recalculate each box's image features, and then classify them.

In recent years, tremendous progress towards more precise object detection has been made; while state-of-the-art object detectors are also growing more and more expensive. In order to reach state-of-the-art preciseity, for example, the latest AmoebaNet-based NASFPN detector will require 167 M and 3045B FLOPs (30 x higher than RetinaNet). The large sizes and costly costs of computation discourage the use of robotics and self-driving cars in many real world applications, where model size and latency are very limited. Due to these constraints on real resources, the efficiency of object detection models is growing.

Within passive surveillance cameras, we aim to improve the recognition of static and sparse data collected over long periods.

Passive monitoring is omnipresent and poses unmistakable computer vision challenges and offers unique opportunities for better precision. For example, many images can be empty of objects of interest at a specific camera location depending on the triggering mechanism and the positioning (up to 75 percent for some ecological camera trap datasets). Moreover, because images are taken automatically in static passive monitoring cameras (without a human photographer) no guarantee is given for the centering, focusing, well lit or the proper scale of the objects in question to be concentrated. These problems are divided into three categories that can result in failures in single frame sensing networks:

• Objects of interest partially observed. Objects can be very close to the camera and can be overwhelmed in the environment by the frame edges, partly hidden by camouflage or very far from the camera.
• Low quality image. Things like snow and nebula are poorly lit, blurred or obscured by the weather.
• Distracting background. If you move to a new camera location, the background objects can be outstanding that cause repeated false positives.

2. Related work

Object detection by region classification.

An Analytical Review Of Iot Based Machine Learning Techniques

Ms. D. Sree Lakshmi, Ms. Divya Adusumilli, V.Sowjanya, D.Srinivas Reddy

Abstract

The development of internet-connected sensory devices, which deliver observations and datasets of the physical world, has facilitated rapid developments in hardware , software and communication technologies. It is projected that by 2020, between 25 billion and 50 billion will be used for the number of Internet-connected devices. The amount of data published will increase as these numbers rise and the technologies mature. The Internet of Things (IoT) technology of internet-connected devices continues to extend the existing internet by linking the physical and cyber worlds. As well as growing length, the IoT produces broad data with various modalities and varying data quality, defined by its velocity in terms of time and position dependence. Smart data processing and analysis are the key to the development of intelligent IoT applications. This article assesses the different methods for machine learning which address the challenges posed by IoT data, considering the key use of smart cities. A taxonomy of machine learning algorithms describing how the various techniques are applied to the data to capture higher level knowledge is the main contribution of this study. There will also be discussion of the potential and difficulties of computer education in IoT data analysis.

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TEXT SUMMARIZATION SURVEY ON INDIAN REGIONAL LANGUAGES

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ABSTRACT:

Now a day's young generation people are very fast in everything. They don't want to spend much time to read to know anything. They are not ready to waste that much of time to read the whole document. Even to see a movie first they are following few statement reviews. If reviews were good then only they are ready to go to movie. In olden days Document (Text) followed by Summary but now a days Summary followed by Document (Text). It shows the importance of Text Summarization. So many abstractive methods were there to summarize text of Indian regional languages. In this paper proposed extractive method GOA algorithm for sentence selection which improve accuracy, precision, recall, f-score for large documents.

I. INTRODUCTION

Text summarization for long documents is one of the challenging issues till now. Text summarization can do basically two types abstractive and extractive. Summarization is one of the important applications in the field of computing. Text summarization is a process of generating a brief version of a single or a set of statements. Automatic summarization of text documents is a challenging problem because it is highly vital to make the resulting summaries cover basic information of the source document(s) as much as possible.

Social media like Twitter, facebook and linkedin have become popular for the government, the public and the professionals to obtain all kinds of topics they are interested in. The speedy growth of social media platforms, it is difficult for people to darting and bolting grasp the information they need. Social media summarization aims to generate a summary to provide the key information of the raw microblogs. There have developed into two categories: extractive and abstractive summarization. Web users are likely to face problems related to the availability of large amounts of data. As the quantity of online content grows, the risk of missing relevant information during search can increase.

Query based summarization is another well-established approach in the automatic text summarization task. Using this approach the summary of the text document is computed on the basis of an input query. This method is depending on user query parameters and hence the user queries given to the system by users. Text summaries are used for reducing the length of the input documents without compromising with its overall meaning and information content. Hence, text summarization is the data reduction process for quick burning by the user.

II. LITERATURE SURVEY

"Automatic Keyword and Sentence-Based Text Summarization for Software Bug Reports." S. G. Jindal and A. Kaur. IEEEAccess April 2, 2020.

"Generative Adversarial Network with Policy Gradient for Text Summarization" Banafsheh Rekabdar, Christos Mousas, Bidyut Gupta. 2019 IEEE 13th International Conference on Semantic Computing (ICSC).

In this paper they Interpret the summary generation process as a reinforcement learning setting in which a sequence of actions is taken (generating the tokens of the summary) based on a policy regulated by the generator in a generative adversarial network. They employed the policy gradient method following the seqGAN. This model has 2 main parts, generator and discriminator. The generator aims to generate a summary indistinguishable from the human summary, based on the given source article. The discriminator, conditioned on the source article, tries to distinguish the machine-generated summary from the human written one.

"Sequence Generative Adversarial Network for Long Text Summarization" Hao Xu, Yanan Cao, Ruipeng Jia, Yanbing Liu, Jianlong Tan. 2018 IEEE 30th International Conference on Tools with Artificial Intelligence.

They apply the sequence generative adversarial training protocol to text summarization, and show that it already outperforms state of the art methods on both English and Chinese corpora to long source text.

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A study on impacts of organizational culture on organizational commitment using nine-dimensional approach

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ABSTRACT

The relationship between organizational engagement and corporate culture within a Chennai City sample and examines the relationship between corporate culture and corporate participation. The findings showed that demographic factors including schooling, marriage and jobs had no substantial effect on the presence of the organization. This shows the positive relation with the commitment to the organization of an acceptable and creative company culture, but the connection between bureaucratic corporate culture and corporate commitment is small.

Selection and peer-review under responsibility of the scientific committee of the Emerging Trends in Materials Science, Technology and Engineering.

1. Introduction

The field of education has recently changed rapidly and many schools have had to adapt their culture to survive this transition. Their goals were to build and disseminate information, and other cultural groups did not challenge their methods. The culture of higher education for decades reflected GUMPORT (2000)' almost public status as social institutions for the cultivation, protection and maintenance of knowledge were discussed in Fig. 1 Table 1.

Many Western scientists have analyzed corporate culture, leadership, work satisfaction and organization. Comparative research on organizational culture, management styles, employee retention and work performance in the United States and in Europe has been investigated previously.

The culture of the world is a perspective of people. In Fig. 2 the personalities and thoughts of the different members of the college community are hard to generalize. Given their differences, professors shared common characteristics of personality. Lindholms found that the majority of faculty members can operate individually, be privately owned and understand themselves. The motivation of the instructor is built on the conviction that the faculty members deal with shared principles.

For approximately two decades' corporate culture has been a significant topic in literature on business and business. One explanation is that corporate culture has always been regarded as eager to have a range of positive outcomes both at corporate and personal level. For the 8th century when organizational culture was originally written (see Deal and Kennedy 1982, Deal and Ouchi, for example), Ritchie (2000, p. 1) notes that organizational culture is motivated by performance, creativity, excitement, belonging, self-confidence and ethical behavior (for instance. '9-seven, later writers claimed enterprise organizational culture.

In a survey of the most profitable corporations, CEO interviewees suggested that corporate culture is their principal impetus for improving this critical power. In Fig. 3 due to its importance and effect on organizational performance, it is also an important company issue for science and business news. Today, CEOs are confronted with numerous unexpected challenges that involve flexibility. Recent organizational crisis has shown the need for leaders and individual involvement by the politicians of organizations, which is becoming increasingly necessary for the organization's survival.

Briefly, the impact of corporate culture, particularly in higher education, has in the past not been paid much attention to business involvement. The goal of this study was therefore to resolve this question. The links between these two variables and numerous other participatory precedents, including the demographics of faculty members, were examined in this empirical study.

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