

Proceedings of the Sixth National Conference
on
Innovations and Advancements in Electrical Sciences

NCIAES'21



Organized by

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

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KPR Institute of
Engineering and
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PREFACE

The Sixth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'21) is organized by Department of EEE, KPR Institute of Engineering and Technology (KPRIET) in association with ISTE, IEEE Madras Section, IE(I) and IETE. KPRIET promoted by KPR groups, is a renowned institution that focuses to offer quality education to the younger generation to strengthen our nation in the field of Engineering and Technology.

The NCIAES is emphasis on “Greener Energy for future Generation”. The conference accomplishes on recent trends in the field of Electrical, Electronics, Communication and Computer Science Engineering. A substantial number of technical papers has been received in variety of disciplines for deliberations, the outcome of which is aimed at emerging trends in the respective field.

More than thirty presented papers maintained the high promise suggested by the full-length papers and the programme was chaired in a professional and efficient way by the session chairmen. We are indebted to those who served as session chairs. We would like to thank all participants for their contributions to the conference and for their contribution to these Proceedings. It is appropriate that we record our thanks to our fellow members of the organizing committee for their support to make the conference highly successful. We would also like to bestow our appreciation for all the faculty members in making excellent logistical arrangements. The efforts set has made a great contribution to the success. The continuing success of conference like this will lead for fruitful upliftment in a continuous series.

Dr. V. KUMAR CHINNAIYAN, HoD/EEE

MESSAGE FROM CHAIRMAN



I am pleased to invite you for the upcoming Sixth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'21) with the theme “Greener Energy for future Generation” on 26th April 2021. I am happy to know that through this conference, the college proposes to showcase the current and emerging trends in the engineering and technology. As the topic for the conference discusses the recent trends in the field of Renewable Energy, IoT, Artificial Intelligent and allied sectors, definitely creates a forum for young budding engineers and research scholars. I congratulate the organizers for taking the initiative to host this national conference. I am confident that this conference will be a grand success, and that all participants will enjoy a fruitful and enlightening discussion. I wish the participants, all the very best in their future endeavors.

Dr.K.P.Ramasamy
Chairman, KPR Groups

MESSAGE FROM PRINCIPAL



It is my pleasure and honour to invite the technocrats for Sixth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'21). I appreciate the organizers for choosing the theme of national importance, "Greener Energy for future Generation". I am very much happy to note that this conference is organized in association with ISTE, IEEE Madras Section, IE(I), IETE. I am sure that the conference would set the stage for academicians across the spectrum of technology and industry to discuss and review the status of technological advancements in the country in renewable energy sector. I hope, this would go a long way to set a frame work to upgrade and improve the ever changing panorama of power generation, distribution and utilization. I wish the organizers of the conference the best in their endeavors to make the conference a grand success.

Dr.M.Akila
Principal

MESSAGE FROM ORGANIZING SECRETARIES

On behalf of the Organizing Committee, it is our pride and privilege to invite you for Sixth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'21) to be held in KPR Institute of Engineering and Technology, Coimbatore. All the faculty members of our department are eagerly looking forward to welcome delegates from various part of the country. Our college has sprawling lush green lawns and is spacious with buildings of architectural excellence. Coimbatore, Manchester of South India is known for its textile, motor industry, auto component industry, medical tourism and hospitality. Apart from this, the city has more than 50 engineering colleges and five universities and has become an education hub of Tamilnadu.

Improving quality in Engineering is the dream and aspiration of all Engineers. This kind of conferences will definitely create a forum for young budding engineers and technocrats to discuss the advancements in the various fields of engineering. Amidst the power packed technical sessions, we, the organizing committee is committed to host a conference conducive to a plethora of knowledge sharing through key note addresses of eminent personalities. We hope that this conference will be a positive contribution towards building the youngest generation with good quality of technical skills.

We look forward to welcoming you to KPRIET, Coimbatore and assure that your stay would be pleasant and productive.

Prof.S.VIVEKANANDAN

Prof.G.SARAVANAN

Organizing Secretaries

ORGANIZING COMMITTEE

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ABOUT THE INSTITUTION

KPR Institute of Engineering and Technology (KPRIET) is a new generation engineering college established in the year 2009 at Avinashi Road, Arasur, Coimbatore District, Tamil Nadu under KPR Educational Trust of KPR Group, one of the largest industrial conglomerates and vertically integrated apparel manufacturing companies in India.

KPRIET is approved by AICTE, New Delhi and affiliated to Anna University, Chennai, is dedicated for an unparalleled learning experience. The Institution has been accredited by NAAC with 'A' grade and 5 UG programs (CIVIL, CSE, ECE, EEE and Mechanical Engineering) have been accredited by NBA, New Delhi. The college is recognized under 2(F) and 12 B.

KPRIET offers eight undergraduate programmes (4 years) in Bachelor of Engineering namely

- Artificial Intelligent and Data Science
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science and Engineering
- Electrical and Electronics Engineering
- Electronics and Communication Engineering
- Mechanical Engineering

And four post graduate programmes (2 years) in Master of Engineering namely

- Structural Engineering
- VLSI Design
- CADD / CAM
- Computer Science and Engineering.

Ever since the inception, KPRIET is committed to holistic education and making the teaching – learning process more meaningful. The zeal and dedication with which KPRIET revolves is well depicted in its motto “CELEBRATING KNOWLEDGE”, making it different from many institutions offering engineering education at large.

This commitment to excellence is supported by a strong team of experienced professionals and is best reflected in its goal to become a globally recognized institute of engineering and technology. The KPR group of companies has established a lead position in South India with interests in Textiles, Wind energy, Sugar and Automobile. The companies are threaded by a unified code of values: commitment to excellence, quality and the willingness to give back to the environment.

Vision of the Institute

To become a premier institute of academic excellence by imparting technical, intellectual and professional skills to students for meeting the diverse needs of the industry, society, the nation and the world at large.

Mission of the Institute

- Commitment to offer value based education and enhancement of practical skills.
- Continuous assessment of teaching and learning process through scholarly activities.
- Enriching research and innovative activities in collaboration with industry and institute of repute.
- Ensuring the academic process to uphold culture, ethics and social responsibility.

Quality Policy

- To impart education to bring academic excellence.
- To ensure students upholds moral and ethical values.
- To cater the demand driven needs of various stakeholders.
- To promote research and facilitate technology transfer of societal significance.

Vision of the Department

To be the centre of higher learning in the field of Electrical and Electronics Engineering by educating the students to meet the global challenges with professional ethics and social consciousness.

Mission of the Department

- Providing technical, intellectual and ethical environment to the students through knowledge centric education and research.
- Collaborating with industries in the vicinity, nationally and internationally for exposure and innovation.
- Enabling the students to serve the society through prolific ideas

Department of Electrical and Electronics Engineering

PROGRAM OUTLINE

26th April, 2021

09.55 am – 10.00 am	Prayer Song
10.00 am – 10.05 am	Welcome Address
10.06 am – 10.10 am	Felicitation
10.11 am – 10.15 am	Presidential Address
10.16 am – 10.20 am	Briefing in the conference
10.21 am – 11.20 am	Session I
11.21 am – 11.30 am	Tea and Networking Break
11.31am – 01.00 pm	Session II
01.00 pm – 02.00 pm	Lunch Break
02.01 pm – 03.30 pm	Session III
03.31 pm – 03.45 pm	Tea and Networking Break
03.46 pm – 03.57 pm	Valedictory
03.57 pm – 04.00 pm	National Anthem

SESSION DETAILS

Paper ID	Title
1001	Child Rescue System against Open Bore-Wells at Agriculture Fields in India
1002	Floating Solar Power Plant using IOT
1003	Automation of Agricultural Fertigation Using IoT and Machine Learning with Intrusion Alerts
1004	Reduced Switch Count Multilevel Inverter with Fault Diagnosis Operation
1005	Power Theft Detection in Customer Consumption Using Smart System
1006	Applications of Machine Learning in Electrical Engineering
1007	Smart Crop Protection System Against Wild Animal Attacks
1008	UVC Scan Disinfection System for Logistics in Effectiveness Testing
1009	Wireless Battery Charging System for Electrical Vehicles Application
1010	Investigation of Modified Multilevel Inverter Under Partial Shaded Condition
1011	Online Inspection Using Cognex Vision System
1012	Accountability as a way forward towards Cloud Information Technology
1013	Self Powered Vehicle with Enhanced Battery Technology
1014	IoT Based Automatic Wheel Chair
1015	IoT Based Home Automation Using Cloud
1016	Image Processing Based System for Leaves Disease diagnosis
1017	Design of Dam Reservoir Control and Monitoring Systems Based on IOT and Machine Learning
1018	Automation of Agricultural Fertigation using IoT and Machine Learning with Intrusion Alert
1019	Electrical Efficiency Improvement of Semi-Transparent Photovoltaic Module
1020	IOT and Machine Learning Based Smart Home Energy Management System
1021	Internet of Battery
1022	Underwater Image Restoration with an Estimation of Background Light and Equalization Technique
1023	Smart Crop Protection System Against Wild Animal Attacks
1024	Prepaid Energy Meter Using GSM
1025	Single Axis Solar Tracking System Using Arduino and Stepper Motor
1026	Control of Double Stage Single Phase Solar PV Inverter
1027	Automatic Charging of Battery for EV Application Using Dynamo
1028	Arduino Based Fire Fight Robot
1029	Arduino Based Voltage, Current and Power Measurement by using IoT
1030	Automatic Number Plate Recognition System
1031	Smart Solar Grass Cutter Using Bluetooth with Lawn Coverage
1032	IoT based Irrigation System
1033	Smooth Start of a Single Phase Induction Motor

1034	Performance and Analysis of Modified Multilevel Inverter Under Partial Shaded Condition
1035	Solar Powered Unmanned Paint Bot
1036	Autonomous Agri Robot with Plant Disease Detection and Pesticide Spraying
1037	IoT Based Disaster Monitoring and Management
1038	Smart Power Theft Detection Using Arduino and GSM Module
1039	Physical Modelling of Pure Electric Vehicle With Dynamic Factors Using MATLAB / Simulink
1040	Optimizing Border and Patrol Communication of Fishing Boats Using LIFI Technology
1041	Distribution Line Monitoring and Controlling Using IoT
1042	Economical Bowling Machine with PWM controller
1043	Automatic Phase Changer
1044	IoT Patient Health Monitoring in COVID Quarantine
1045	Smart Street Light Management
1046	Footstep Power Generation Using Piezoelectric Tiles
1047	Wireless Power Transmission Using Tesla Coil
1048	GSM Controlled Pick and Place Robot using Microcontroller
1049	Automatic Digital Temperature Controlled Fan
1050	E-Waste Management
1051	Follow Me Robot
1052	Smart Pill Box
1053	Switched Capacitor Multilevel Inverter with Voltage Boosting Ability for EV Applications

Paper ID:NCIAES 1001

Child Rescue System Against Open Bore-Wells at Agriculture Fields in India

¹E. Babu, ²N. Jegadeeswari, ³M. Kiruthika, ⁴N. Kousalya

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^{2,3,4}UG Scholar, Department of EEE, Jai Shriram Engineering College, Tirppur

Abstract:

Normally, we have gone through many incidents of children falling into abandoned bore wells. Usually, the bore well which takes almost 20-60 hrs. To overcome this issue we proposed a system, in which the Robot can move inside the bore well and rescue the child safely. In our project we use pic micro controller which is used to control the Ultrasonic sensor. This Ultrasonic sensor is used to measure the distance at which the victim is present and displays it on the LCD display in both meter and centimeter. The Rescue unit consists of two DC motors and a LED light. Thus, our project is easily portable and less expensive which can be used in any situation to rescue the victim safely and also in less time.

Paper ID:NCIAES 1002

Floating Solar Power Plant Using IoT

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Abstract

Now a days, the biggest challenges before India is the power crisis. Fossil fuels are limited in future so, replaced Renewable energy. It is also good for the environment. Energy generation from solar has advantageous over sources of energy generation, in all over the world India is the seventh country having largest land, mostly 300 days of solar radiation. Availability of land is minimum and its cost also so high. FLOATING SOLAR ENERGY is the new technology solves all issues. This system can be installed over any water bodies, Studies of PV panels are shown that due to cooling of solar panels and its generation capacity can increases by 16%. It decreases the cost of land and also increases the amount of generation with the cooling effect of water. An IOT Based Solar Power Monitoring system monitors the Solar panel parameters like voltage current and power generated over a Web server using internet and the solar panel detects sunlight using LDR so that it can get positioned where it receives maximum sunlight, due to this solar panel can operate at its maximum.

Paper ID:NCIAES 1003

Automation of Agricultural Fertigation Using IoT and Machine Learning with Intrusion Alerts

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³Assistant Professor, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

Agriculture sector supports the country's economy to a great extent and to maintain that, it is required to produce great yield which requires proper irrigation water and fertilizer management. With the concept of IoT, Cloud and Machine Learning there is a scope of economical monitoring system in real time with field status notification. Thus, the proposed model provides the automated fertigation and observing system using IoT to monitor the soil's moisture level, temperature and humidity of atmosphere, machine learning to predict the right amount of water along with intrusion detection and control of pesticide sprayer using webpage. The raw sensor data are transferred to cloud platform and depending on prediction value relay turn ON/OFF the motors accordingly. The results obtained from the proposed project are promising and justifies the work.

Paper ID:NCIAES 1004

Reduced Switch Count Multilevel Inverter with Fault Diagnosis Operation

¹S. Vivekanandan, ²A. Hari Priyadharshini, ³S. Harshinee Sakthi, ⁴A. Hephzi

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Abstract:

This paper proposes a seven level reduced switchcount multilevel inverter with reduced number of power switches. Multilevel inverter is a power converting device which is used for high voltage and high power applications of low switching losses and minimum total harmonic distortion and even reduces the size and number of passive filters, but the number of switches is comparatively higher. The proposed reduced switch count multilevel inverter (RSC – MLI) is based on the modified H-bridge topology, intended to reduce the switch count in a multilevel inverter. This idea not only accomplishes higher power ratings but also enables the use of renewable energy source. It actually decreases the switching losses, number of power electronic switches, cost and low order harmonics. As the number of level increases the harmonic content of output voltage waveform decreases. The proposed model presents a seven level inverter with minimum number of switches.

Paper ID:NCIAES 1005

Power Theft Detection in Customer Consumption Using Smart System

¹Dr. V. S. Chandrika, ²S. Bhavana, ³P. Brindha, ⁴R. Deepika

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Abstract:

Power theft is a big issue in developing countries. Stealing electricity is considered as a crime. Power theft in a country hits its GDP hard. So it is very important to prevent power theft for undisturbed supply of good quality power everywhere. This paper aims at designing and implementing a power theft detection system in customer and distribution side. Normally power theft is done by directly tapping power from the lines. This system helps in detecting the power theft and in locating the area in which power is stolen. With the help of sensors placed in respective regions power theft is identified and alert is sent to authorities. The ultimate goal is to prevent power theft and it helps in providing good quality power to legal users.

Paper ID:NCIAES 1006

Applications of Machine Learning in Electrical Engineering

¹Pragati Sawant, ²Salomi Devkule, ³Mayuri Gurav, ⁴Gayatri Shinde, ⁵Shubham Kharat

^{1,2,3,4,5}Department of Computer Science and Information Technology

Rajarambapu Institute of Technology, Sakharale Sangli, India

Abstract:

Machine learning has opened doors for limitless opportunities in many domains from marketing, finance, healthcare, transportation, gas and oil, space technology and so on. The field of electrical engineering is not an exception. Electrical engineering is a very quantitative engineering discipline that studies some of the most complex systems, which produces loads of data that we don't yet understand completely. Naturally, a data-driven field like machine learning finds various applications in electrical engineering. This paper explores the recent findings in applying machine learning to electrical engineering systems. The aim of this paper is to give brief note about some of the important areas in electrical engineering and see how machine learning has been used in each of them. Applications of machine learning in areas of electrical engineering, such as power engineering, control systems, signal processing, telecommunications, energy management systems, sensor systems are also discussed.

Paper ID:NCIAES 1007

Smart Crop Protection System Against Wild Animal Attacks

K.Divyach Selvi

UG Scholar, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

This paper describes the design of smart crop protection system against wild animal attacks for the protection of crops from wild animal's attack. Animals are the second major threat for farmers after drought. Crops are vulnerable to animals. The wild animal's intrusion is growing rapidly. This leads to the reduction of agricultural yield, causes property damage and also loss of human life. It will be a major and common issue for farmers having agricultural lands nearby the forest area. The manual way of monitoring the animal intrusion will be a tedious process and this requires huge effort from humans, cost, and time which is cumbersome. The identifying and repelling device is used to protect the crops from animal intrusion. In addition to that, a fire sensor is used to identify the fire in the farm by which the signal is sent to owner of the farm. By these methods, the farm can be safeguard from potential damages.

Paper ID:NCIAES 1008

UVC Scan Disinfection System for Logistics in Effectiveness Testing

¹C. Dinesh, ²A. Elango, ³K. Jegan, ⁴M. Kesavarajan

¹Assistant Professor, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

^{2,3,4}UG Scholar, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

The Covid-19 has been a disasterous pandemic all over the world. Many researchers and doctors have been putting their full efforts dedicatedly to fight against covid-19 pandemic. This paper resolves a one major problem, which is disease transmission through the passenger fomites in railway station and airports. Typically, the crowd will be more in transport service places. The proposed system is parallel to the X-Ray machines used in airports for the purpose of passenger's luggage disinfectant. This system consist of UVC bulbs of about 11 watts with 250 nm. In this system, tunnel contains bulb in all sides and three bulbs engaged in each corner of tunnel to disinfect the passenger fomites. The tunnel dimension is about 620 x 420 mm. This system takes 8 seconds to sanitize the fomites with chemical free operation. The conveyor belt is employed for light passing in the all side of luggages for complete sanitation.

Paper ID:NCIAES 1009

Wireless Battery Charging System for Electrical Vehicles Application

¹G. Saravanan, ²N. Arun Pandian, ³B. Jayasuriya, ⁴R. Arun Ashwin

¹Assistant Professor, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

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Abstract:

The production and technology of rechargeable batteries devices faces major technological difficulties due to obstacles such as low energy density, rough feel, but high bar, among others. The electro magnetism switch is a unique pattern of flashover (WPT) provides a novel approach to obtaining strength of engine devices, thus reducing over-reliance on the batteries. WPT is discussed in this article. Working structures, technological problems, metal, and traditional systems are all highlighted in these techniques. This article, which focuses on WPT, focuses on chopping key studies issues and addresses potential improvements. characteristics This innovative energy transfer method has important consequences for the widespread use of clean energy in our everyday lives, and to use a rechargeable battery to run in work has been charged to a certain amount.

Paper ID:NCIAES 1010

Investigation of Modified Multilevel Inverter under Partial Shaded Condition

¹P. Kowsalya, ²M. Sweta

^{1,2}UG Scholar, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

Prompted researches have been looking into a variety of renewable energy resources, like solar energy from a PV system for a sustainable energy requirements. Multilevel inverter are provided with a low THD for better classes of converters. We proposed a replacement multilevel inverter in this paper. In this paper, reducing the switch count for three phase modified multilevel inverter for nine-level is proposed. For each phase, the proposed multilevel inverter structure includes a voltage conversion cell of switching sequence and with an H bridge unit. The single phase for the total harmonic nine-level inverter has eight switches. The examination is held with the multilevel inverter of THD level for DC voltage of symmetric and asymmetric of SPWM technique.

Paper ID:NCIAES 1011

Online Inspection Using Cognex Vision System

¹R. Sampath Kumar, ²N. Muralikrishna, ³K. Ramprasad, ⁴R. Surya

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Abstract:

Traditionally, in industries the quality control and check is done by human beings and it take more time and also reduces the human power. In some cases, the visualization of the product is very difficult and dangerous and it cannot be done by human experts. This paper provides a overview of the theoretical forecasting methodologies for inspecting the products by using cognex8000 vision system which is controlled by the Programmable Logic Controller (PLC). The main objective is to identify the defects, instead of using complicated filters like correlation and edge enhancement. It checks on the bases of size, shape, color and dimension. Results provide that the real time detection with high accuracy.

Paper ID:NCIAES 1012

Accountability as A Way Forward towards Cloud Information Technology

¹J. Madhumitha, ²C. L. Subhiksha, ³M. Yuvashree, ⁴B. Lalitha, ⁵P. Praveena

^{1,2,3}UG Scholar, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

^{4,5}Assistant Professor, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract :

Cloud computing is a new technical concept that allows us to access data and applications on-demand from any place at any time. Cloud computing has become one of the most common and rapidly growing technological advancements due to its flexible payment models, recognizable Web interface, scalability, and independence from local machines. As a result, cloud computing has the ability to enhance healthcare delivery as well as current health information systems and practices. Only a few examples have included ability to use massively scalable computing tools, remote access to electronic health records through computer or mobile devices, and processing and analyzing data from wearable technology. Despite the many benefits of cloud computing, major security, privacy, and regulatory issues continue to stymie the cloud's integration with medical care. The focus of this review is to clarify the fundamental aspects of cloud technology, as well as to recognize its potential applications, benefits, challenges, and solutions to those challenges.

Paper ID:NCIAES 1013

Self Powered Vehicle with Enhanced Battery Technology

¹R. Revathi, ²S. Sasidharan, ³G. Kumaran, ⁴M. Mariesh

¹Assistant Professor(Sr. G), Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

^{2,3,4}UG Scholar, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract :

The covid-19 pandemic has created a situation where public transportation turns out to be not advisable, and people start encouraging their vehicles for safety reasons. If this was the situation, then the number of vehicles on the road would be increased drastically which will lead to a lot of pollution problems and also demand for fuel. To balance the situation, an innovative vehicle with a self-powered facility using piezo transducer and regenerative braking technology with innovative battery pack technology has been created and it turns transportation into a sustainable one. The battery system is designed with new innovative and efficient techniques. All the innovations and designs lead to eco-friendly, sustainable, and more comfortable transport facilities with cheap prices that could be affordable by normal people. The application for the designed self-powered vehicle including Battery Management System (BMS) can be adopted in the field of battery-powered vehicles. This new move towards renewable energy and environmental friendliness is a goal worth aiming for as the Earth's natural resources continue to diminish. Self-powered vehicles are indeed a very important component in the future of the nation. It is sure that the execution of this prototype will definitely contribute towards the technological development in the field of electrical and electronics engineering, make the pride of very own country, India.

Paper ID:NCIAES 1014

IoT Based Automatic Wheel Chair

S.Karthik Pandian

UG Scholar, Department of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

Different models of wheelchairs are available in markets today. Research studies are focusing to build automatic wheelchairs, so as to employ them in several critical areas of human assistance. The most common image of disability is the people in wheelchairs. Wheelchair is who find themselves unequipped to move without external aid. This study attempts to build a simple line follower autonomous path following wheels, by modifying a readily available existing wheelchair. The main objective of the project was to design a remote healthcare system. It's comprised of three main parts. The first part being, detection of patient's vitals using sensors, second for sending data to cloud storage and the last part was providing the detected data for remote viewing.

Paper ID:NCIAES 1015

IoT Based Home Automation Using Cloud

¹B. Abirami, ²S. Harini, ³K. Janani

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Abstract:

The idea behind Google assistant-controlled Home automation is to control home devices with voice. On the market there are many devices available to do that, but making our own is awesome. On the market there are many devices available to do that, but making our own is awesome. In this web server used to create virtual switches, is linking to IFTTT (If This Than That) which is used to create if else conditional statements. The voice commands for Google assistant have been added through IFTTT website. In this home automation as the user gives commands to the Google assistant, Home appliances like Bulb, Fan and Motor etc., can be controlled accordingly. The commands given through the Google assistant are decoded and then sent to the microcontroller, the microcontroller in turn control the relays connected to it. The device connected to the respective relay can be turned On or OFF as per the users request to the Google Assistant. The microcontroller used is NodeMCU (ESP8266) and the communication between the microcontroller and the application is established via Wi-Fi (Internet). Home automation with the proliferation of IoT is changing into a reality currently, and a range of players like, Apple, Google, Amazon, Samsung, etc. are all convergence into this area to produce the platform and solutions for sensible homes. The most important objective of this paper is to produce an outline of web of Things, architectures, and very important technologies and their usage in our standard of living.

Paper ID:NCIAES 1016

Image Processing Based System for Leaves Disease diagnosis

¹S. Dinesh, ²G. Guhan, ³S. Hareesh

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Abstract:

Agriculture is the most essential and foremost economic activity of all the times. Plants have become important source of energy. Agriculture plays an important role in farmer's life. Sometimes manual identification of disease is time consuming and need of labour is more. One of the most important facts that reduce the growth of plants is disease attack. Thus detection and diagnosis of disease at the right time is essential to the farmer. The production rate can be improved by disease detection in well-time. Overall study about agriculture shows that quality and quantity of agricultural products may be reduced due to various factors of plant diseases. Until industrial revolution, the huge number of human population depends only in agriculture. But now, agriculture in India is undergoing a structural change which leads to a crisis situation.

Paper ID:NCIAES 1017

Design of Dam Reservoir Control and Monitoring Systems Based on IOT and Machine Learning

¹L. Akash, ²S. Hemanth Raj, ³R. Dhanush Surya

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Abstract:

An Uncontrolled water level can make a reservoir overflow due to lack of information to the flood gate supervisor, this is due to the current flood gate control system. One of the developing fields of technology is the Internet of Things (IoT). The IoT on this prototype are used for real-time control and monitoring of water levels by using a web server as an interface. In addition to this Machine learning is used for data set prediction. The components used consist of micro controller, level sensor, humidity sensor, flow sensor, relay, LCD, and GSM module. Depending on the comparison made by the micro controller based on flow of water level, humidity and rainfall values it concludes whether the water will reach the critical level which could cause flood or not and a message will be sent to notify the authorized people near reservoirs using GSM. In addition to this LCD and alert buzzer is connected to notify the reservoir superior. This system monitors and predicts the change in reservoir levels which indicates the development of floods and then sends flood notification to the inhabitant of such zones for necessary action. The designed system is based on IoT with machine learning and it is used to monitor, detect and report the environment's status to a control unit.

Paper ID:NCIAES 1018

Automation of Agricultural Fertigation Using IoT and Machine Learning with Intrusion Alert

¹S. Dhanush Kumar, ²A. K. Dheepak, ³S. Gokulprasanth, ⁴C. J. Vignesh

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Abstract:

Today's world is growing towards the automation of day-to-day daily life tasks focused on creation of smart cities, smart homes etc. indicating that technology is advancing rapidly, so the field of agriculture also requires that application of the latest technologies to make the life of farmers much simpler. Agriculture sector supports the country's economy to a great extent and to maintain that, it is required to produce great yield which requires proper irrigation water and fertilizer management. With the concept of IoT, Cloud and Machine Learning there is a scope of economical monitoring system in real time with field status notification. The primary purpose of automating the fertigation setup is to enable remote control and monitoring of the status of the setup even when farmer is away from the location. The currently used system includes a lot of human efforts, money and time which will not be required after the development of an automated fertigation system.

Paper ID:NCIAES 1019

Electrical Efficiency Improvement of Semi Transparent Photovoltaic Module

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Abstract

Scientists who believe that solar power is the most abundant form of energy that can meet society's needs, which derive from continuous economic growth, have opened the floodgates of research focusing on sustainable power energy in recent years. Solar energy is used in at least four different ways in our everyday lives, ranging from heating water to electricity generation. Photovoltaic technologies are at the top of the list of solar-powered applications, with prediction reports predicting that in the next 12 years, PV technologies will produce approximately 345 GW and 1081 GW, respectively, of solar-powered electricity. A photovoltaic cell is a device that uses semiconductor materials to transform sunlight into electricity. As photons from sunlight are absorbed and ejected, electrons are ejected, leaving a void that is filled by surrounding electrons, allowing electron flow. The photovoltaic effect is the phenomenon of electron flow caused by photon absorption. The PV cell guides electrons in a single direction, resulting in a current. PV solar cells are a variable current source since the amount of current is proportional to the number of absorbed photons. There are approximately 24 different types of solar cell technologies made from various materials and methods. The focus of this review paper is on transparent solar cells. However, it is appropriate to clarify the evolution of solar cells, beginning with the silicon form, in order to appreciate the principle of transparent solar cells. A brief overview of solar cell technologies is given below. Price, performance, and operating lifetime are all issues that photovoltaic cells face. Researchers are now concentrating their efforts on developing materials that can solve these obstacles.

Paper ID:NCIAES 1020

IOT and Machine Learning Based Smart Home Energy Management System

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Abstract:

An IoT based smart home energy management system model is proposed to improve the energy efficiency in smart home and energy saving can be achieved by controlling and monitoring electrical home appliances. The sensors sense the operations of selected gadgets over a smart phone. The gadgets data are monitored around the globe in real time for easy access or security purposes. Gadgets operating information is sent to the cloud via Wi-Fi module and router support. In order to track the working state, the user can view the data in the cloud dash board and also be authenticated to view in the public. The machine learning concepts are implemented with IoT for security purpose at user end and forecasting of energy consumption is analyzed for future purpose and daily basis load operation.

Paper ID:NCIAES 1021

Internet of Battery

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Abstract:

An efficient energy-management system for Li-ion battery in an EV is developed. The system uses an ACS712 sensor to detect current and voltage in the circuit while LM35 Thermistor is used to detect the temperature. The data output from these sensors is stored and manipulated through Node MCU. The State of charge (SOC) of the battery is the index which shows the amount of charge present in the battery. The SOC depends upon various parameters, such as current, voltage, temperature and pressure. In this experiment the temperature, current and voltage are considered for determining the SOC. Various battery parameters are used to determine the health of the battery matter while determining the performance of the battery, one of the main parameters that has been considered is SOC. The object of hybrid models is to benefit from the advantages of each method and obtain a globally optimal estimating performance.

Paper ID:NCIAES 1022

Underwater Image Restoration with an Estimation of Background Light and Equalization Technique

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Abstract:

Underwater images suffer from color cast and low visibility caused by the medium light scattering and absorption, which will decrease the valuable information of the image. In this project, we propose a novel method which includes five stages namely image pre-processing, background estimation, global equalization of histogram, local equalization of histogram and multiscale fusion to improve the underwater image quality. Background light estimation is used to determine the color tone of underwater images. Global equalization of histogram is employed to correct the color of input image according to the characteristics of each channel. Local equalization of dual interval histogram based on average of peak and mean values is used to improve contrast of the image based on the characteristics of each channel. Dual-image multi-scale fusion is used to integrate the contrast, saliency and exposure weight maps of the color corrected and contrast enhanced images. Various types of degraded underwater images are experimented with the proposed and state-of-art techniques, which shows that the proposed method produces better output results in both qualitative and quantitative analysis. Thus, the proposed method can be implemented for the restoration of underwater images which would be helpful to determine the soil moisture and ocean salinity mapping. Based on these details, the density of seawater can be determined, because it is a vital factor to drive the currents in oceans.

Paper ID:NCIAES 1023

Smart Crop Protection System Against Wild Animal Attacks

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Abstract:

Agriculture is the backbone of economy and it is the fundamental method for occupation. The huge population of world depends on farming for living day to day life. About 70% of our population depends on cultivation and many of the cultivations are contributed from here. Most of the cultivation cannot be effective only by means of physical activities, so it should be handled by innovative technologies. Moreover, after drought, crop vandalization is the second major threat faced by the farmers. The aim of this project is to provide a smart solution to resolve this problem. The main focus of our project is to protect the crops from damage caused by animals and to divert the animal from the farm without any harm. Crops in farms are many times destructed by local animals like buffaloes, cows, goats etc. This leads the farmer to suffer from huge losses. It is not possible for farmers to safeguard entire fields or stay on field for 24 hours and guard it. Therefore, here we propose an automatic crop protection system from animals. An animal detection system is designed to detect the presence of animal and offer a warning to it.

Paper ID:NCIAES 1024

Prepaid Energy Meter Using GSM

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Abstract:

Prepaid Electricity Energy Meter is a good concept in which you can recharge its balance, like we do in our mobile phones. In this project we are building a automated system by using Arduino and GSM module. You can recharge the electricity balance through this system, just by sending a SMS. It can also disconnect the home power supply connection, if there is low or zero balance in the system. And this system will reads the energy meter readings and automatically send some updates to user's mobile phone like low balance alert, cut off alert, resume alert and recharge alert. Modern prepaid meters work by helping consumers keep track of how much electricity they are using. Prepaid meters are able to count the flow of electricity used in KWH. The meter balance decreases as the consumer uses electricity, and there is an LED light on the meter that flashes as electricity is consumed.

Paper ID:NCIAES 1025

Single Axis Solar Tracking System using Arduino and Stepper Motor

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Abstract:

Solar power generation had been employed as a renewable energy for years ago. Residents that use solar power as their alternative power supply will bring benefits to them. The main objective of this paper is to develop a microcontroller-based solar panel tracking system which will keep the solar panels aligned with the Sun in order to maximize in harvesting solar power. When the intensity of light is decreasing, this system automatically changes its direction to get maximum intensity of light. For rotating the appropriate position of the panel, a stepper motor is used. This design is covered for a single axis and is designed for residential use. Finally, the project is able to track and follow the Sun intensity in order to get maximum power at the output regardless motor speed. Solar energy is rapidly advancing as an important means of renewable energy resource. Solar tracking enables more solar energy to be generated because the solar panel is able to maintain a perpendicular profile to the sun's rays. Though initial cost of setting up a solar tracking system is high, this paper proposes a cheaper solution. Design and construction of a prototype for solar tracking system with single degree of freedom, which track the sunlight by the step angles using stepper motor, is discussed in this paper. The control circuit for the solar tracker is based on an Arduino UNO microcontroller.

Paper ID:NCIAES 1026

Control of Double Stage Single Phase Solar PV Inverter

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Abstract:

This paper presents the modelling, simulation and hardware evaluation of a single phase dual stage inverter suitable for grid connected solar photovoltaic (PV) applications. The proposed grid-tied solar power converter converts the solar power to DC using a simple boost converter and then converts it into AC using a single phase DC-AC inverter, which is connected to the power grid. A closed loop simulation of the proposed setup is modelled with Maximum Power Point Tracking (MPPT) in MATLAB-Simulink environment. The hardware implementation of the proposed system is implemented and the experimental results are presented. Experimental results on the grid measurements confirm that the system is able to supply the harvested energy from the PV to the grid.

Paper ID:NCIAES 1027

Automatic Charging of Battery for EV Application Using Dynamo

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Abstract:

The research and project work describes the design and fabrication of a VEHICLE WITH REVERSE CHARGING TECHNOLOGY for short and medium distance transportation. The main components of this innovative model are DC Gear motors and its controller, motor drivers, Li-ion batteries, generator, bluetooth for transmission and Arduino as main controller. This whole system is working based on the supply from battery. The controller plays vital role in controlling the battery power in an efficient manner by the motor driver. This vehicle prototype after implementation can also be used in applications like commuting and fulfills the purpose of energy conservation, Electrical Bike with reverse charging and as a multipurpose hybrid eco friendly way of transporting medium.

Paper ID:NCIAES 1028

Arduino Based Fire Fight Robot

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Abstract:

This paper about the robot is defined as a mechanical design that is capable of performing human tasks or behaving in a human-like manner. Building a robot requires expertise and complex programming. It's about building systems and putting together motors, solenoids, and wires, among other important components. There are a number of subsystems that must be designed to fit together into an appropriate package suitable for carrying out the robot's task. A firefighter robot is one that has a small fire extinguisher added to it. By attaching a small fire extinguisher to the robot, the automation put out the fires it detects can be achieved. The fire detection scheme to be put into use is relatively free of false alarms, it is anticipated that it will not overreact in non-fire simulations. As mentioned earlier, the design of the robot is according to specification of the contest.

Paper ID:NCIAES 1029

Arduino Based Voltage, Current and Power Measurement by Using IoT

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Abstract:

Energy demand is an existing problem for the developing country like India. The energy generation plays a vital role in the economic growth of the country. India is the third largest power generator and the third largest power consumer in the world, energy demand and scarcity rules the country. Energy audit and conservation can be the best solution for the raising energy demand. This paper describes the energy audit methodology for an organization utility. Nowadays in the new trends of power market, it is a very difficult task to satisfy the power balance concepts even though the consumers are able to pay their costly demands. So the energy conservation and energy management concepts are necessary for the flexible utilities. The energy audit is a process to identify the facilities from different areas. An energy auditing system inspects and analyses the flow of energy to cut back energy consumption while not affecting the number and quality of productions undesirably. Energy monitoring is one of the important applications arising from research in Internet of Things (IOT). Smart meters allow us to obtain periodic updates of energy consumption data that can be analyzed to provide important insights into energy usage.

Paper ID:NCIAES 1030

Automatic Number Plate Recognition System

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Abstract:

Automatic number plate detection is a picture process technology that uses range (license) plate to spot the vehicle. The target is to make ANPR economical automatic approved vehicle identification system by mistreatment the vehicle range plate. The system is enforced on the doorway for security management of extremely restricted space like military zones or of space around high government offices e.g., Parliament, Supreme Court etc. The developed system initially detects the vehicle then captures the vehicle image. Vehicle range plate region is extracted the image segmentation in a picture. Optical character recognition technique is employed for the character recognition. The ensuing knowledge is then will be compared with the records on an info therefore on return up with the particular data just like the vehicles owner, place of registration, address, etc. The system is enforced and simulated in python, and their performance is tested on real image. It's determined from the experiment that the developed system with success detects and acknowledge the vehicle range plate on real pictures.

Paper ID:NCIAES 1031

Smart Solar Grass Cutter Using Bluetooth with Lawn Coverage

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Abstract:

The smart grass cutter system puts forth a completely automated lawn mower mechanism. The robotic vehicle is equipped with a grass cutter blade that allows for grass cutting at high RPM. The system has a smart functionality that allows it to cover the complete area of a lawn or garden by detecting corners using ultrasonic sensor and moving in a zigzag manner in order to cover the entire area. This efficient system uses a microcontroller-based circuit in order to achieve this functionality. It is a battery-operated system that uses 2 batteries. One battery is used to run the vehicle movement DC motors and the other one is used to power the grass cutter motor. Also, the system uses a solar panel to demonstrate the charging of vehicle movement battery. The microcontroller operates the vehicle movement dc motors as well as the grass cutter at the same time as monitoring the ultrasonic sensors. The microcontroller smartly operates the dc motors using the motor driver IC to achieve desired movement based on ultrasonic inputs. The system also uses a gyro sensor in order to achieve perfect 180 degree turns in order to achieve complete lawn/garden coverage. Thus, this system allows for fully automated grass cutting system without the need for any human intervention. Hence, the whole system of operation is controlled by means of a Bluetooth module. We can easily turn on and off the system by the help of a smart phone.

Paper ID:NCIAES 1032

IoT Based Irrigation System

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Abstract:

Agriculture is the basic spring of food supply for all nations in the world. IOT solution for irrigation to the gardens or agriculture using automatic control via soil moisture sensor and manual control using an app. Blynk app was designed for the Internet Of Things. It is control hardware remotely, it can display sensor data, it can store data, visualize it and do many other cool things. NODEMCU is an open source based firmware that runs on the ESP8266 Wifi soc from Espressif system. The system consists of a sensor network for humidity, temperature, soil moisture. Soil moisture, temperature are placed in the origin zone of the crops. DHT11 is a humidity and temperature sensor. Relay Module is an electrically operated switch that allows you to turn on or off a circuit. Soil moisture values on and off times are also recorded on IOT platform which can be monitored around any corner of the world. The LM2956 is a commonly used popular step-down switching regulator IC.

Paper ID:NCIAES 1033

Smooth Start of a Single Phase Induction Motor

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Abstract:

The paper is designed to provide protection to induction motor, by applying voltage gradually from low to high for smooth start. Induction motor during the initial starting condition takes up much larger current than its capacity. This leads to motor instantly catching the speed resulting in high mechanical stress and also causing some damage to the motor is based on the SCR firing angle control principle. The paper consists of a two anti-parallel SCR's connected in series with an induction motor to the supply. At the time of start the firing angle is heavily delayed by received delayed pulses from an operational amplifier. The op-amp operates in comparator mode which compares zero voltage pulse to develop a saw-tooth voltage. This waveform is further compared against a varying voltage by charging and discharging of the capacitor to develop delayed pulse for triggering the SCRs. A lamp is provided in this paper in place of an induction motor for demonstration purpose. Further the paper can be enhanced by using six SCRs, two connected in back-to-back for each phase.

Paper ID:NCIAES 1034

Performance and Analysis of Modified Multilevel Inverter Under Partial Shaded Condition

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Abstract:

Prompted researches have been looking into a variety of renewable energy resources, like solar energy from a PV system for a sustainable energy requirements. Multilevel inverter are provided with a low THD for better classes of converters. We propose a replacement multilevel inverter in this paper. In this paper, reducing the switch count for three phase modified multilevel inverter for nine-level is proposed. For each phase, the proposed multilevel inverter structure includes a voltage conversion cell and with an H bridge unit. The single phase for the Total Harmonic nine-level inverter has eight switches. The examination is held with the multilevel inverter of THD level for DC voltage of symmetric and asymmetric PWM techniques.

Paper ID:NCIAES 1035

Solar Powered Unmanned Paint Bot

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Abstract:

The painting chemical can cause hazards to the human painters such as eye and respiratory system problems. Also the nature of painting procedure that requires repeated work and hand rising makes it boring, time and effort consuming. When construction workers and machine are properly integrated in building tasks, the whole construction process can be better managed and saving in human labour and timing are obtained as a consequence. In addition, it would offer the opportunity to reduce or eliminate human exposure to difficult and hazardous environments, which would solve most of the problems connected with safety when many activities occur at the same time. Its design, development and implement helps to achieve low cost painting equipment's and safety. These factors motivate the development of an automated painting system.

Paper ID:NCIAES 1036

Autonomous Agri Robot with Plant Disease Detection and Pesticide Spraying

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Abstract:

Various diseases found on plants can reduce the quantity and quality of the agricultural products. Identification of plant diseases with naked eye is time consuming and does not give accurate results. Farmers get affected with various diseases of plants due to long exposure to pesticides. Automatic spraying of pesticides will reduce the health issues related to farmers. The present work proposes an efficient method to detect the cotton leaf diseases using various image processing techniques. The agri-robot presented here helps the farmer to take decision locally or allows connecting with other existing services. Ordinary camera (webcam, mobile camera) is inserted in this system, to reduce the cost of the overall solution. Plant disease identification by continuous monitoring visually is very difficult task and at the same time less accurate and can be done only in limited areas. Whereas if image processing technique is used for disease detection then it will take minimum effort and time is most correctly. In this paper we have implemented the image processing techniques using MATLAB to detect four types of diseases on cotton leaf. Once the disease is detected spraying of pesticides is done with the help of agri-robot. This agri-robot not only detects disease but also spray pesticides to protect them from disease.

Paper ID:NCIAES 1037

IoT based Disaster Monitoring and Management

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Abstract:

Dams are of major importance, primarily because of their use for generating hydroelectricity and Irrigation purposes. This has resulted in the construction of a number of dams in potential areas over the years. As there are a lot of risk factors associated with the existence of these dams, it has become the Need of the hour to develop a proper monitoring and regarding the opening of the shutters thereby management system for maintaining a safe water level in dams. Mismanagement of dams can lead to manmade disasters. Currently dams in our state are being monitored and controlled manually. This manual intervention can increase the probability of error and also results in time lag in decision making. The aim of this project is to design and implement a IoT based Disaster Monitoring and management System for Dams (IDMMSD). The proposed system involves real-time monitoring of water level of a group of dams under study.

Paper ID:NCIAES 1038

Smart Power Theft Detection Using Arduino and GSM Module

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Abstract:

Power theft is a criminal practice. Power thievery has become a critical problem in today's electrical power system. It results in huge economic losses and also leads to irregularity in the power distribution system. This issue is more profound in developing countries as they are high populated. In highly populated country like India where power necessity is being consistently rising, power theft is a very severe problem. Power theft is needed to be eliminated. It is very inconvenient to check power meters door to door. This paper suggests a method to monitor and keep a check over power theft using microcontroller Arduino uno board and GSM module. The system comprises of current transformers connected between the poles, lines and houses to detect the power flow disturbance and various relay modules are also connected to the line to cut-off the supply when the thievery is detected.

Paper ID:NCIAES 1039

Physical Modelling of Pure Electric Vehicle with Dynamic Factors Using MATLAB / Simulink

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Abstract:

Increase in global temperature urged the world to reduce carbon emissions from vehicles as a part of reducing air pollution and atmospheric temperature. The project is a measure to reduce the pollution due to transportation by introducing electric vehicle instead of petrol/diesel engine run vehicles. The increase of Electric Vehicle numbers would lead a considerable reduction in polluting gases emission. The analysis of Electric Vehicle in simulation platform is cumbersome. This proposed work deals with the modelling of Electric Vehicle in MATLAB/Simulink. The proposed design consists of dynamic factors, battery conversion circuits and braking system. This simulation was checked and run successfully.

Paper ID:NCIAES 1040

Optimizing Border and Patrol Communication of Fishing Boats using LIFI Technology

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Abstract:

Wireless technology has bloomed to a great extent that it require wireless technology to transmit. Nowadays, fisherman has faced many disaster in the ocean due to communication issues the LIFI can be overcome the issues. This communications has become important in communication way to transmit wireless data using light intensity to this is data transmission using Visible Light Communication (VLC). It can be used to establish the communication between two boats in unmanned areas. The application can be widely used by people in the border to find the appropriate path to reach the destination. In this mechanism, we have implemented embedded system to save the fishermen life and to avoid the problems between two countries hence make good relationship between them. The fishermen crosses the sub border then the warning signal is given to both the countries and alarm is indicated to fisher men. The boat will automatically stop and if matched to fishermen id, they can proceed to sail the boat or may take any action for crossing border. Microcontroller is used in this process application operates based on device tracking mechanism. This provides ease to operate even for illiterate people. The VLC has been used for the communication of data transmission of the boat to base stations it can useful to time of unpropagation of RF signals.

Paper ID:NCIAES 1041

Distribution Line Monitoring and Controlling using IoT

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Abstract:

Distribution line mainly consists of transformers and power cables. If we monitor the distribution transformer alone we can achieve the whole process of monitoring the distribution line. If we continuously monitor the real time parameters of the distribution line we can easily find out fault and theft in the distribution line. The proposed monitoring system works in real time and uses temperature- sensor, potential transformer and current transformer for monitoring temperature, voltage and current of the distribution transformer and sends these information to a remote server where it can be monitored and necessary action may be taken to avoid the outage of the electricity supply. Our other aim is also to control the distribution line in the remote area securely without any human interaction. This is achieved by modern technology using Internet of Things.

Paper ID:NCIAES 1042

Economical Bowling Machine with PWM controller

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Abstract:

For several years, ball pitching systems have been used in sport preparation. The aim of this project is to create the cheapest ball pitching device ever, capable of automatically throwing balls at various appropriate adjustable speeds for cricket practice. Typically, balls are tossed from a platform that uses motors, but the user may also control the discs and swing. The batsmen will benefit from the bowling machine's assistance in mastering their abilities. Different bowling patterns can be created by the machine. The unit is made up of two motors, one of which rotates clockwise and the other anticlockwise. The distance between the wheels should be moderately less than the diameter of the tossed ball. Between the two motors, a valve is mounted. The balls are inserted into the valve when the motor reaches the desired rpm. By frictionally grasping the ball between two spinning wheels, this machine transfers kinetic energy to the ball. The motor's rotational speed can be changed independently using an electronic regulator. The whole unit is placed on a height adjustable stand.

Paper ID:NCIAES 1043

Automatic Phase Changer

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Abstract:

Power instability in developing countries creates the need for automation of phase selection or alternative sources of power to back up the utility supply. Phase absence is a very common in any industry, home or office. Many times one or two phases may be interrupted, because of this some electrical appliances will be continuously turn ON and OFF will create big disturbance. The main objective of this system is to provide uninterruptable for single phase loads even in the failure of one or two phases in a three phase system. This system is designed to check the availability of any live phase, and the load will be connected to the particular live phase only. Even a single phase is available the load will be in ON condition. If two or three phase are alive, the load will be connected to the R phase only, whenever any of the three phase is not alive the indicator will indicate to us. The controller continuously checks for live condition of all phase connected to it and the controller connect the load to the active phase using a relay.

Paper ID:NCIAES 1044

IoT Patient Health Monitoring (In COVID Quarantine)

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Abstract:

Healthcare is given the extreme importance now a- days by each country with the advent of the novel corona virus. So in this aspect, an IoT based health monitoring system is the best solution for such an epidemic. Internet of Things (IoT) is the new revolution of internet which is the growing research area especially in the health care. With the increase in use of wearable sensors and the smart phones , these remote health care monitoring has evolved in such a pace. IoT monitoring of health helps in preventing the spread of disease as well as to get a proper diagnosis of the state of health, even if the doctor is at far distance. A portable physiological checking framework is displayed, which can constantly screen the patient's heartbeat, temperature and other basic parameters of the room. We proposed a nonstop checking and control instrument to screen the patient condition and store the patient information's in server utilizing Wi-Fi Module based remote correspondence. A remote health monitoring system using IoT is proposed where the authorized personal can access these data stored using any IoT platform and based on these values received, the diseases are diagnosed by the doctors from a distance.

Paper ID:NCIAES 1045

Smart Street Light Management

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Abstract:

Currently, Street lighting in India faces many problems. Firstly, there is no base line data to understand how many faulty lights are in the field. Next issue is that there is no data to measure the energy consumes by individual street lights. Finally, it is common to see street lights working even during the day. This leads to wastage of electricity. This project is to monitor the faulty lights over large connection of street lights, to monitor the energy consumed by each street lights, to control the energy consumed by the overall street lights and make the respective street lights to glow when they need. This can overcome the crisis of natural power production resources in forth coming days. This can reduce the wastage of electricity. Ultimately can conserve some of the natural resources from completely getting vanished. This can be used in street lights , which saves lot of energy consumption by street lights. It is applicable in every streets in rural areas, highways, metropolitan cities etc.,

Paper ID:NCIAES 1046

Footstep Power Generation using Piezoelectric Tiles

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Abstract:

Energy is nothing but the ability to do the work. In our day to day life, electricity is most commonly used energy resource. Walking is the most common activity done by human beings. While walking, energy is wasted in the form of vibration to the surface and this wasted energy can be converted into electricity by Piezoelectric effect. Piezoelectric Effect is the ability of certain materials to generate an electric charge in response to applied mechanical stress, pressure or any vibrations. The electrical energy is generated by this project is non-conventional. The generation of power is by walking or running on the piezo electric sensors mounted on the floor tiles. To increase the usage of renewable energy which has no adverse effects on the environment. To create a pollution free environment that ensures the wellbeing of living things on earth. To reduce the usage of non-renewable energy and fossil fuels. This is the Project for the utilization of waste mechanical energy of foot power with human locomotion is very much relevant and important for highly populated countries like India. The electrical energy produced by the pressure is captured by floor sensors and converted to electrical charge by Piezo transducers, then stored and used as a power source. Energy crisis is the main issue of world these days. The motto of this project work is to face this crisis somehow.

Paper ID:NCIAES 1047

Wireless Power Transmission using Tesla Coil

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Abstract:

Wireless power transfer is the transmission of electrical energy from a power source to an electrical load without any conductive physical connection. Wireless electricity ensure that the cell phones, laptops, iPods, and other power electrical devices get charged on their own, with no need of plugging them that can prevent the sockets with all sorts of wires. Wireless power transfer is when the magnetic field is transferred over short distance. The magnetic field is created using inductive coupling between coils of wire or electric fields using capacitive coupling between electrodes. The most common form of wireless power transmission is carried out using direct induction followed by resonant magnetic induction. The carrying fluxes that induce in the inductor can be captured by another inductive coil that can produce an induced flux between the receiver coils that coupled to the primary coil. Since this technique using magnetic field to transfer the electrical energy, the flux that produces in the primary coil must be in high density with high frequency. Thus, the tesla coil is used as a transmitter to produces high voltage, high frequency and low alternating current in order to produce high density flux. In this work, a tesla coil is a main part of transmitter component in wireless electricity apparatus and need to develop with a view to demonstrate how magnetic induction is coupled to perform a wireless power transfer. In addition, the construction of winding coils of the tesla coil would be the great effects in order to provide electricity to supply a load without wires in distances.

Paper ID:NCIAES 1048

GSM Controlled Pick and Place Robot Using Microcontroller

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Abstract:

GSM controlled robot or SMS controlled robot is a wireless robot which performs the necessary actions by receiving a set of instructions in the form a Short Message Service (SMS). In this project we can control the robot directions like forward, backward, left and right by sending SMS from the mobile. It mainly consists of 2 sections, one is mobile unit and the other one is robot unit. The GSM modem which is fix zed at the robot receives the messages sent by the mobile and gives the instructions to the microcontroller to control the robot directions. Here, we interface 8051 microcontroller with GSM SIM 300. The protocol used for the communication between controller and GSM modem is UART (Universal Asynchronous Receiver Transmitter). This system continuously checks for message to take the decision for controlling the robot.

Paper ID:NCIAES 1049

Automatic Digital Temperature Controlled Fan

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Abstract:

The temperature-based fan speed control system can be done by using an electronic circuit using an Arduino board. Now Arduino board is very progressive among all electronic circuits, thus we employed Arduino board for fan speed control. The proposed system is designed to detect the temperature of the room and send that information to the Arduino board. Then the Arduino board executes the contrast of current temperature and set temperature based on the inbuilt program of the Arduino.

Paper ID:NCIAES 1050

E-Waste Management

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Abstract:

Electronic waste or E-waste is relatively a novel addition to the ever-growing hazardous waste stream. It includes discarded electronic and electrical equipment. Developing countries are facing enormous challenges related to the generation and management of E-waste which are either internally generated or imported illegally; India is no exception to it. However, the existing management practices related to E-waste in India are reasonably poor and have the potential to risk both human health and the environment. Moreover, the policy level initiatives are not being implemented in an appropriate way. The austere problem of E-waste along with its policy level implications is looked upon in the paper. During the course of the study it has been found that there is an urgent need to address the issues related to E-waste in India in order to avoid its detrimental future consequences.

Paper ID:NCIAES 1051

Follow Me Robot (Robot to Work at COVID-19 Hospital Wards)

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Abstract:

In today's world robotics and automation has seen a boom in every industry applications. Medical stream also need to explore these field to support the current scenario. The whole world is stepping into industrial automation which is known as Industry 4.0. This project speaks put forth the views and application of completely automated "FOLLOW ME ROBOT". As Social distancing and contact less interaction has been encouraged during the pandemic situation. We use an Arduino to build an autonomous "follow me" robot that connects to a smartphone via Bluetooth and uses GPS to navigate. This provides an added advantage where instruction need not to be delivered at regular intervals to the robot. The initial programming of the robot give orders to the robot. The Bluetooth signal sets the destination of the robot. This project at application level would be more effective and would set a recent trend in the industry.

Paper ID:NCIAES 1052

Smart Pill Box

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Abstract:

Our project's main aim is to make a Smart medicine box for those users who regularly take medicines and the prescription of their medicine is very long as it is hard to remember to patients and also for their care giver. Also, Old age patients suffer from problems of forget to take pills on proper time which causes certain health issues for patients having Permanent diseases like diabetes, blood pressure, breathing problem, heart problems, cancer diseases etc. We saw these problems in hospitals & people around us who have such kind of diseases and thus based on these two problems we made smart medicine box which solve these problems by Setting up time table of prescribed medicines through push buttons as given in prescription. Present time will be saved in RTC module and notification time will be saved in EEPROM. Therefore, at the time of taking medicine system generate Notification sound and display the Bright light in certain pill boxes. So, patient can know the specific number of boxes from which he has to take out medicines. All pill boxes are pre-loaded in the system which patient needs to take at given time. And our system has quality that it can sense if the patient had taken out pills from the box or not.

Paper ID:NCIAES 1053

Switched Capacitor Multilevel Inverter with Voltage Boosting Ability for EV Applications

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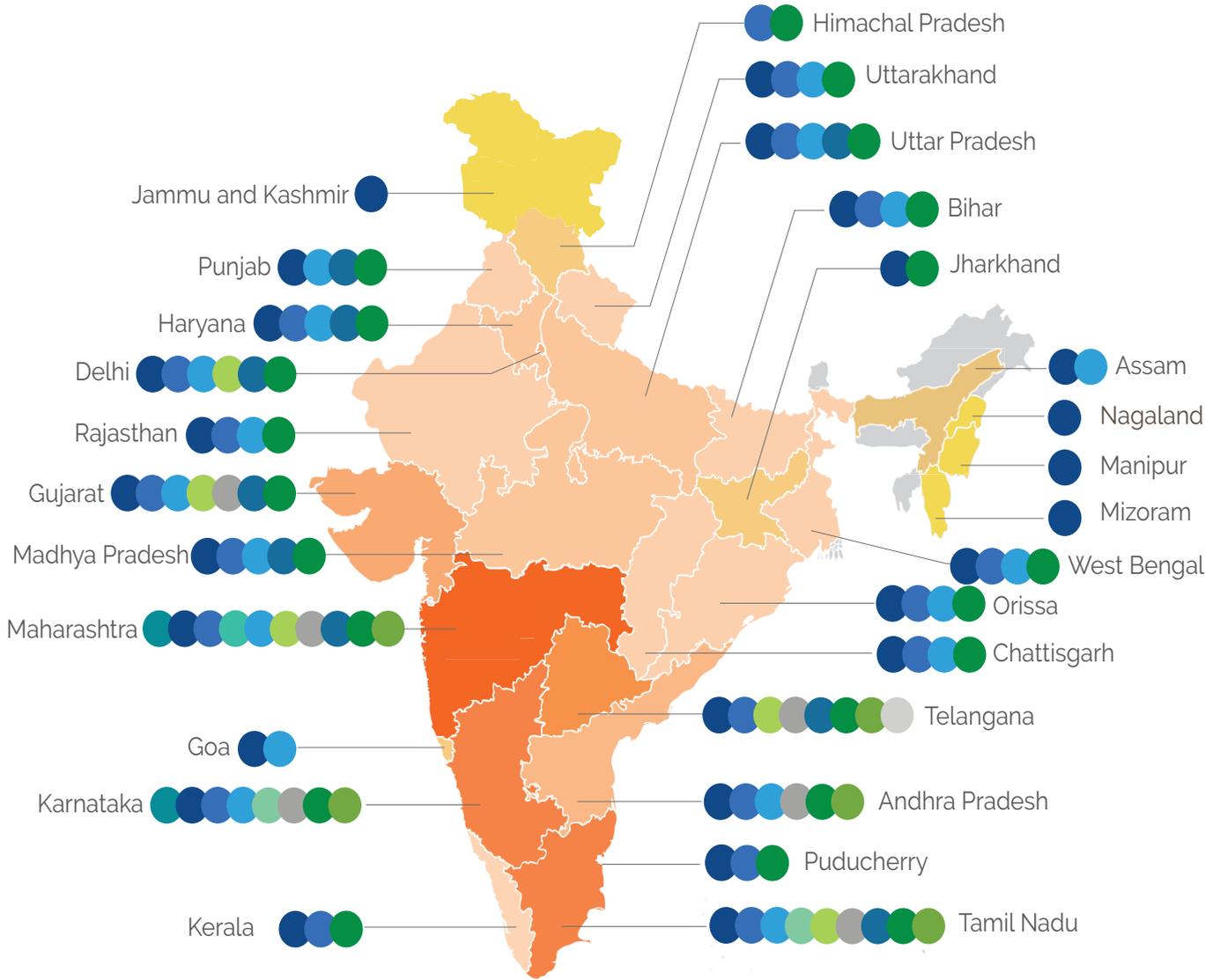
Abstract:

The generalized topology of a hybrid switched capacitor (SC) multilevel inverter (MLI) for Electric Vehicle (EV) applications is presented. By employing the series-parallel conversion technique, the proposed SCMLI can achieve self-balancing of capacitor voltages and voltage step-up with arbitrary numbers of SC cells. The output power quality is improved by the intermediate voltage levels provided by the bidirectional switched converter connecting to the dc source string. Besides, several active switches can be replaced with diodes if large phase difference between output current and voltage is not required. Since the voltage ripple magnitude of the SC units is inversely proportional to the fundamental output frequency, the proposed SCMLI is more preferable for EV applications. This paper elucidates the working principle of the proposed inverter with detailed circuit and switching states description under staircase modulation. The mathematical analyses associated with the capacitor voltage ripples, sizing and power loss are also provided. A 7-level MLI with a voltage gain of three was realized by cooperating two SC units with a voltage source string consisting three symmetric dc sources. The operation and performance of the proposed inverter has been validated by the simulation on the inverter. The results showed that the inverter performed better and the power quality was satisfactory with the 7-level staircase output modulated at the fundamental frequency.



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