TEQIP-3
Technical Education Quality Improvement Programme

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ICAET-2020

TEQIP-III, BPUT, Odisha (ATU) sponsored

International Conference on

ADVANCES IN ENERGY TECHNOLOGY

17th & 18th January 2020

Organized by : **EE & EEE Department**

GANDHI INSTITUTE FOR EDUCATION & TECHNOLOGY

NAAC Accredited A+ Grade Engineering College

Baniatangi, Bhubaneswar, Khurda, Odisha, India -752060

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17th & 18th January, 2020

Edited and Compiled by

Dr. Pradyumna Kumar Sahoo

Convener, ICAET

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ABOUT GANDHI INSTITUTE FOR EDUCATION AND TECHNOLOGY, BANIATANGI

Gandhi Institute for Education and Technology was established at Baniatangi, Bajpur, Khurda by the SPBM foundation, Bhubaneswar in May, 2009 affiliated to Biju Patnaik University of Technology, Rourkela, Odisha. The Postgraduate Centre of Gandhi Institute for Education and Technology is functioning from the year 2013.

In Gandhi Institute for Education and Technology, every effort is harnessed to realize the dream of making this educational institution as temple of learning. It is the aim of GIET to participate in the task of inculcating necessary Knowledge, Skills and Creative Attitudes and Values among the youth of the country to contribute more effectively towards establishing an equitable social and economic and secular ideal of our nation. GIET is well known for its dedicated faculty, staff and the state-of-the art infrastructure conducive to a healthy academic environment. The Institute is constantly striving to achieve higher levels of technical excellence. Evolving a socially relevant and yet internationally acceptable curriculum, implementing innovative and effective teaching methodologies and focusing on the wholesome development of the students are our concerns. The Institute currently has seven academic departments including PG departments in four disciplines of engineering, with nearly more than 50 laboratories organized in a unique pattern of functioning, Central Library with state of the art facilities, Auditorium, Student Activity Centre, Computer Centre, Indoor Games facilities, basket ball & Athletic stadium, Seminar Halls with required infrastructure etc. Faculty of repute, brilliant student community, excellent technical and supporting staff and an effective administration have all contributed to the pre-eminent status of Gandhi Institute for Education and Technology.

It is almost a residential institute housed with nearly 1800 students. It has 06 hostels out of which 04 hostels for boys and 02 hostels for girls. Lovely gardens, student amenities, shopping complex, water fountain, play ground facilities etc. in the campus are of immense interest for students. The placement service at the institute is one of the best of its kind for its 1st batch of students. The alumni of the institute hold responsible and enviable positions all over and are in constant touch with the institute. Every new entrant into the portals of this institution is poised for partaking a rich heritage and tradition that is unique to GIET.

Each year, we do conduct Cricket, Football tournaments, besides the annual athletic meet. The students of the Institute also participate in various sports and games competitions elsewhere to represent the Institute. The students run many hobby clubs like Photography club, Music club, Science club, Debate club and Fine Arts club. The competitions on debate, music etc. are organized department wise, hostel wise and Institute as a whole. The Institute organizes its annual cultural festival 'SPARKLE' every year. There are many facilities for the students to engage themselves in extra- curricular activities. Sports and cultural activities have become part and parcel of the campus life.

The institute brings out a Institute Newsletter: "The Campus Focus" every quarter which publishes literary and technical articles, faculty and students achievements, publications, various activities carried out inside the campus and etc.. To motivate the students in social services, the Institute has a unit of CSR team. The students of this unit render social services in the nearby rural areas.

The Institute is well connected by road, rail and air to all national as well as international destinations. The Institute has been awarded as best Technical Institute by leading Organizations for last three years.

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Message Board

VICE-CHANCELLOR
BPUT, ODISHA

MESSAGE

The conferences are necessary to bring in culture of information exchange and feedback on developing trends in technologies. I am delighted to note that the Department of EE & EEE, Gandhi Institute for Education & Technology, BANIATANGI is organizing the International **Conference entitled "International Conference on Advances in Energy Technology (ICAET-2020)**". Certainly, this type of conference not only brings all the researchers, students at one platform, but it also inculcates the research culture among the entire fraternity of Education in the country, thereby, contributing to the development of nation.

I hope that this conference would certainly induce innovative ideas among the participants paving way for new inventions and technologies in energy systems.

I Congratulate, Gandhi Institute for Education and Technology, Baniatangi, and their team for initiating the conduction of such a conference.

I wish the conference a grand success.

Dr. Chitta Ranjan Tripathy
B.Sc. (Engg.),M.Tech.(IIT,Kharagpur),PhD(IIT,Kharagpur)
Vice Chancellor, B.P.U.T.,Odisha

CHAIRMAN
Gandhi Group of Institutions
ODISHA

MESSAGE

It is an honor and great privilege for me to once again chair this impressive international academic event the **International Conference on Advances in Energy Technology (ICAET 2020) on 17th &18th January,2020** in Gandhi Institute for Education & Technology, Baniatangi..

In line with our past conference achievement, we have once again included this year.We have also received a wide selection of papers of exceptional standards for presentation. Our foreign dignitaries has been overwhelmingly enthusiastic and we look forward to sharing valuable know-how, improving skills and stimulating ideas together.

The conference strives to impart new frontiers of knowledge in current scientific evidence based information and technical skills in the field of engineering. We assure to keep the presentations balanced, stimulating and catering to your personal learning goals. The emphasis will be on a strong academic program delivered by the masters in their fields.I am sure the deliberations held at this Conference will immensely help the various professionals who will participate in it

I wish all the success to the ICAET 2020 and the Organizers of the International Conference.

Dr. Satya Prakash Panda
Chairman
Gandhi Institute for Education and Technology
Baniatangi, Bhubaneswar

VICE-CHAIRMAN

MESSAGE

I am delighted to note that the Department of EE & EEE is organizing the International Conference entitled"**International Conference on Advances in Energy Technology (ICAET 2020)**". The foundation stones of GIET are laid on the essence of academic pursuit and excellence. Excellence in any work can be achieved with utmost dedication, hard work, and perseverance. We, at GIET, have made this dictum our motto and our way of life in every single activity in the campus.

Research and development forms the backbone of our curriculum .The staff and students are engaged in various path-breaking innovative research activities all throughout the year. Every department of our Institute organizes conferences and seminars frequently on contemporary and relevant topics in order to facilitate research in those areas which will lead to necessary metamorphosis in the academia as well.

Both the EE & EEE departments, right from their inception, have been active in research and innovation and have setup an ambient academic environment for their students and research scholars. With the commitment of highly qualified and efficient staff, the institute endeavors vigorously to make a mark in the field of research and development. The ICAET-2020 is another venture to provide a platform for academicians teachers, students, research scholars, and industry personnel globally to discuss on contemporary trends and innovations in Energy Technology.

I Congratulate, Dr.Pradyumna Kumar Sahoo, Convener,ICAET-2020 and his team for initiating the conduction of such aconference in our esteemed Institute.

I wish the conference all the very best and urge all participants to brainstorm on the various thrust areas of the conference. I also wish all of you a happy stay in our campus and look forward to your participation in various events in the campus.

Prof. Jyoti Prakash Mishra
Vice-Chairman
GIET,Baniatangi,Bhubaneswar

GENERAL CHAIR

MESSAGE

It is my great pleasure to welcome you to the International Conference on Advances in Energy Technology (ICAET 2020) which takes place in GIET,Baniatangi on 17th & 18th January, 2020. It has been a real honor and privilege to serve as the General Chair of the conference.

Over the past ten years, GIET has provided a cross-disciplinary venue for researchers and practitioners to address the rich space of communications and networking research and technology. This year, the program spans two days.

The Keynote presentations will provide ample opportunities for discussions, debate, and exchange of ideas and information among conference participants.

The conference would not have been possible without the enthusiastic and hard work of a number of colleagues. We would like to express our appreciation to the Technical Program Chairs for their valuable contribution in assembling the high quality conference program. A conference of this size relies on the contributions of many volunteers, and we would like to acknowledge the efforts of our faculty members and referees and their invaluable help in the review process. We are also grateful to all the authors who trusted the conference with their work.

Special thanks to all the Keynote Speakers and the Programme Committee for sharing their views on current research topics. We appreciate the support of our sponsors, the Springer Society, SSRN and CRC Press.

We look forward to an exciting week of insightful presentations, discussions, and sharing of technical ideas with colleagues from around the world. We thank you for attending the conference and we hope that you enjoy your visit to the GIET,Baniatangi .

Dr. Hidayat Zainuddin
Deputy Dean(Welfare) & Prof.,School of Electrical Engg.
Technical University of Malaysia Malacca

CO-ORDINATOR, TEQIP - III
BPUT, ODISHA

MESSAGE

I am very delighted to welcome all the authors, delegates, for the *"International conference on Advances in Energy Technology(ICAET-2020)"* being organised at **Gandhi Institute for Education and Technology, Baniatangi,** on **17th and 18th of January 2020**.

This conference will provide a one of the type opportunity for laureates to deliberate upon the advances in energy technology. The use of renewables, smart storage devices, is going to reduce the stress on the power system which in turn will increase the efficiency. This conference will provide an space on the topics interest for the future. Thus bringing awareness and partaking a common pulpit to share notions related to it. We are looking forward to the brainstorming sessions during the conference which would result in greater exchange of Ideas and evolve a resolution to major multipart concerns. The quality of papers received from various streams suggests that the topic is well accredited globally. Thus sharing all research papers in scientific and research community and similar functioning organization would be our pleasure.

I take this opportunity to commend team ICAET-2020 for their tireless efforts for the organization of the event.

Dr. Ranjan Kumar Jena
B.P.U.T.,Odisha

PRINCIPAL

MESSAGE

It gives me immense pleasure to know that Department of EE & EEE is organizing international conference on the theme "Advances in Energy Technology".Globalisation and digitalisation today have dramatically reshaped the education system in India and have created tremendous opportunities for internationalisation, especially transnational or cross-border education. Various educational institutions have partnered with foreign institutions to provide best form of education to the students.

The Conference aims to bring different ideologies under one roof and provide opportunities to exchange ideas face to face, to establish research relations and to find global partners for future collaboration. The themes and sub-themes for this conference are indicative of relevant research areas to give the prospective authors innovative prepositions about the ambit of discussion. Some of the sub-themes include renewable energy ,recent trends, issues and challenges in energy Technology.

There are various pillars of the Education System in a nation. We have invited eminent dignitaries from different sectors to get a better understanding of these pillars of the Energy System and the several strategies involved.

We should take the ICAET-2020 event as an excellent opportunity to share our advances in the field, to create synergies between different researchers in academia and industry, to analyze how technology is evolving, and finally to motivate our young engineers to do it better than us.
I wish the organising committee members a great success.

Dr. Mohan Charan Panda
Principal, GIET, Baniatangi

CONVENER

MESSAGE

This international conference on Advances in Energy Technology (ICAET 2020) organized by our department is an attempt to focus the attention of all concerned professionals to discuss at length related with the Emerging trends in engineering & technology, to seek solutions wherever possible and identify areas where further research is needed. Invited contributions from experts on various topics with separate divisions on Electrical & Electronics, Mechanical, Civil and Computer science are presented in the proceedings.

Engineering is getting excited by the day. New energy technologies with fascinating possibilities are being explored. This conference will be a platform to deliberate all aspects and scope of energy.

Information provided in various papers and reproduced in the proceedings is aimed at benefiting the Engineers and professionals. It is expected that the purpose would be served in a satisfactory manner through in-depth discussion and interaction among participants during the conference. I take this opportunity to record my heartfelt appreciation and gratitude to all the authors, delegates, conference chairs and all others participants.

Dr. Pradyumna Kumar Sahoo
H.O.D.,Dept. of EEE
GIET,Baniatangi,Bhubaneswar

Contents

Concept of virtualization linked to green computing: A case study

Sambit Kumar Mishra, Chinmaya Ranjan Pattnaik
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

In a broad sense, the concept of virtualization is termed as platform consisting of numerous of virtualized and interconnected systems. In such case the system hardware in large scale with strong internet connectivity is linked to virtual machine based servers with adequate operating systems and deployment of relevant software. In many cases, the platform as a service is having a provision to execute the application in the environment with suitable programming level platforms. Accordingly, the database in virtual platform is interlinked with the communication network initiating the nodal activities. In this case, each node is termed as a single database with individual local database management system. The database management system in this case controls the creation, maintenance, and use of a database. Also, it gives permission to conveniently develop databases for other numerous applications. Citing the concept of virtual databases, it may be noted that Windows Azure, Amazon EC2 etc. typically run in virtual platform. Many times it has been observed that the organizations become data-centric and continuously produce large amounts of data along with other commercial information. In such case, the data stored in the database requires to be managed in a proper way. The concept of green computing links to utilization of resources including computer peripherals in the eco-friendly environment and proper disposal of computing devices. Also implementation of green data centers gives positive support towards designing, coding and yielding proper utilization of power with minimal consumption of energy. In this work it is aimed to study the performance of cloud databases in virtual machines and examining feasible solutions. Also, it is aimed to exploit the knowledge of database management systems, virtualization and distributed cloud storage systems to improve the deployment and usability of database systems in the cloud.

Keywords: Virtual machine, Virtual machine monitor, Cloud storage, hypervisor, virtualization

Gold Price Prediction using an Evolutionary Extreme Learning Machine

Suchismita Mishra, Smrutirekha Das, Bikash Chandra Pattanaik
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

Prediction of Gold price has always been most fascinated due to its non-linearity and dynamic time series behaviour, which is constrained by so many influencing factors such as economic data, monetary policy, supply and demand, inflation, currency movements, etc. Since immemorial gold is always having the highest degree of monetary rewards and has been termed as oldest precious metal used in global currency. After understanding the hidden pattern behind the prediction of various things, which needs very fast decisions to make the computational cost of the market, researchers have proposed many statistical and machine learning models for gold price prediction. In this study an evolutionary Extreme Learning Machine (ELM) is designed for future gold price prediction, where two evolutionary estimation paradigms are suggested such as Particle Swarm Optimization (PSO) and Differential Evolution (DE) during training stage to optimize the weights of the network. The performance of the prediction model is measured through Mean Absolute Error (MAE), Root Mean Square Error (RMSE) and Mean Absolute Percentage Error (MAPE) during testing by evaluating over two datasets such as GOLD/INR and GOLD/AED collected with the same period of time. Through, this study a better prediction model can be designed, which will help the gold investor in taking decision for the best time of investing money in the Gold market.

KEYWORDS: Gold price prediction, Extreme Learning Machine (ELM), Particle Swarm Optimization (PSO), Differential Evolution (DE)

Analysis of Graphene as a Medium to Generate Green and Clean Energy from Deep Earth

Banoj Kumar Panda, P.Suneel Kumar
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

Generating electricity from deep earth requires material that can make use of the heat within the earth's crust. Potential for this high conductivity can be seen by considering Graphene. Its hexagonal lattice is a pair of interleaving triangular lattices. Thermal transport in graphene is an active area of research, which has attracted attention because of the potential for thermal management applications. Meanwhile, graphene strings has the capability to provide totally clean energy without any pollution, it is better conductor than copper, lighter than air, stronger than steel and it transfers heat with high efficiency. Graphene strings can transfer heat over its two ends with no loss, where in between it is completely cool. Underneath the Earth's surface, there is unlimited energy. This energy can be carried out using Graphene. This paper is a detailed study of a cutting edge technology that can meet energy needs of the future.

KEYWORDS : Green energy, deep earth, Nanomaterial, Graphene, Carbon, Nanotechnology

Distribution System Voltage Stability Index determination with Nature-Inspired Meta-heuristic Cuckoo Search Algorithm

Akshay Kumar Singh, Veeramuthu Pandian B, Abhishek Mohanty
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

Presently, renewable energy sources are drawing wider applications in the distribution system. The integration of distributed generators (DG) in the distribution system is being done to minimize the power losses and improve the voltage stability of the existing system. Consequently, the sizing and placement of DGs are very crucial. The task of finding the locations for DGs and the proper sizes of DGs can be accomplished with the help of meta-heuristic techniques. Subsequently, in the present paper optimal DG sizing, placement is addressed using cuckoo search algorithm to enhance the voltage profile and to minimize the power loss of the system. Radial 33 and 69 bus distribution systems are considered to check the efficacy of the proposed method. The results are then compared with the other techniques namely the ant-lion optimization algorithm (ALO) and Binary Particle Swarm Optimization algorithm (BPSO). Test results thus demonstrated that Cuckoo Search Optimization algorithm (CSO) out performs the other algorithms in terms of the index terms for the voltage stability and loss minimization.

KEYWORDS : Distributed generator (DG), Meta-heuristic techniques, Loss minimization, Optimal placement, Ant-lion optimization (ALO), Binary particles swarm optimization (BPSO), Cuckoo search optimization (CSO).

Neural Networks based Transmission Line Congestion Analysis of Electric Power Systems

Prakash Chandra Sahoo, Stita Prangna Mishra
Gandhi Institute for Education &Technology, Baniatangi , Bhubaneswar

ABSTRACT:

This paper presents a scheme for congestion analysis of transmission lines of existing power systems based on neural network approach by use of Feed Forward neural network with back propagation technique. This technique is applied on the IEEE 30-bustest system to take care of normal operating conditions and contingency conditions, as well. The results reveal that the proposed approach is very effective as compared to the conventional approach of congestion analysis.

KEYWORDS : Feed Forward Neural Network, Back propagation, Line congestion

Design of Different Controllers for Three Area System Using TLBO Algorithm

Sunita Pahadasingh ,Subhendu Shekhar Sahoo, Abinash Pany
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

This study the load frequency control of three area multi source consisting of thermal unit and hydro units to provide unified power system. Different controllers such as proportional integral derivative (PID), two degree of freedom PID (2DOF-PID), three degree of freedom PID(3DOF-PID) and a novel cascaded three degree of freedom PID (3DOF-PID) with PD controller have studied here for this proposed system. Nonlinearity has considered for this system such as open loop generation constraint. A heuristic algorithm teaching learning based optimization(TLBO) is applied here for optimizing the controlled parameters. The error function integral time absolute error (ITAE) istaken as objective function for this optimization process. A comparison is made between the proposed system with and without GRC using PID controller. Further a comparative study between PID controller, 2DOF-PID controller, 3DOF-PIDcontroller and cascaded 3DOP-PID with PD controller is analysed here. The loading conditions to each area have also studied here and also comparison of loading data's is made through simulations. The effectiveness of controller parameters has shown through numerous simulations using MATLAB/SIMULINK.

KEYWORDS: Load frequency Control (LFC), Degree of Freedom (DOF), Generation Rate Constraint (GRC), Step Load Perturbation (SLP), Teaching Learning Based Optimization (TLBO).

Harmonic analysis in an online Wind Turbine of Double fed Induction Generator subjected to different Transmission Faults

Mitarani Tripathy, Bijay Kumar Mohapatra, Pradyumna Kumar Sahoo
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

This paper Focused on harmonic analysis for an energy conversion system on wind power (WECS) based in a Double Fed Induction Generator (DFIG). A Frequency converter connected back to back is used to excite the rotor winding and stator winding excited by the different electrical networks. This work also focused on harmonic distortion based on the Double Fed Induction generator Model. This analysis also Modelling on different kind of Line and Ground faults of Transmission line. The model is implemented using MATLAB/ Simulink software with the SimPower System Block Set based on computer simulation. Computer simulation shows as significant role in the design, analysis, and assessment of power electronics converter plus their controller. A case study for a 10-MWwind mill is presented and the system has been modelled for the harmonic load flow calculation.

KEYWORDS- Harmonics Distortion, DFIG, Line to Ground Fault, Load flow, Harmonic Analysis.

Comparative Study of STBC and STTC Using Rayleigh Channel

Madhulita Mohapatra, Diptiranjan Swain
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

The increasing demand for high data rates in wireless communication due to emerging new technologies makes wireless communication an exciting and challenging field. One of the major problems wireless communication systems face is multipath fading. Diversity is often used to overcome this problem. There are three kind of diversity - spatial, time and frequency diversity. Space-time trellis coding is a technique that can be used to improve the performance of mobile communications systems over fading channel. It is combination of space and time diversity. Space-Time-Block code provide simple decoding but not coding gain while Space-Time-Trellis code provide full diversity and coding gain at the cost of complex decoding. Data is encoded by a channel code and the encoded data is split into n streams that are simultaneously transmitted using n transmit antennas. The received signal at each receive antenna is a linear superposition of the n transmitted signals perturbed by noise. The codes constructed here provide the best trade-off between data rate, diversity advantage, and trellis complexity. Here I have presented analytical performance results for space–time trellis codes over spatially correlated Rayleigh fading channels. Here I have analysed and compared the QPSK STTC and STBC over Rayleigh fading Channels for determining Performance. Here an analysis for the bit error rate (BER) performance of space-time block codes (STBC) and space time trellis code (STTC) has been done.

KEYWORDS—Diversity, STBC, STTC, BER

Multifunctional Smart Energy System by Internet of Things

Subhendu Shekhar Sahoo, Bijaya Kumar Mohapatra, Prakash Chandra Sahoo
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

This paper focuses mainly on two fields, one is on Irrigation system and smart street light system controlling using arduino and IOT platform. In present era, water scarcity occurs in agricultural sector. Therefore an automatic plant irrigation system has to be designed for the proper water supply in the fields. This project deals with an automatic plant irrigation system which automatically senses the moisture content by soil moisture sensor, Arduino Uno, motor driver and ESP8266 WIFI connector. It is programmed to sense the moisture content and provide sufficient water to irrigation system. A weather monitoring system, which provides the information of the weather in our neighbouring environment. It provides the details about the surrounding temperature, barometric pressure, humidity and dew point. The components used in this prototype is the ESP8266 based WI-FI connecter, Arduino Uno, DHT sensors. In this modern era where energy is a major concern worldwide, it is our prior responsibility & liability to save energy effectively. With the development of technology, where automation system plays a vital role in daily life experience and is being preferred over the traditional manual system today. Here we propose an IOT based street light monitoring and controlling system to ensure, low power consumption, instant faulty light detection and light dimming as per external lighting conditions. Our proposed system consists of smart street lights that have external light sensing that automatically turns on at the desired intensity based on an amount of lighting needed.

FPGA-based implementation of a 32 bit DSP processor to achieve high performance gain

Sivalingam. S, Diptiranjan Swain, Madhulita Mohapatra, Amita Rani Das
Gandhi Institute For Education & Technology, Baniatangi, Bhubaneswar

ABSTRACT:

Digital signal processor are a new generation processor using in digital signal processing. In daily life of consumer, they demand for faster processing. So to fulfil that demand we need a faster, less delay, less power consumed DSP processor. In this paper a DSP with 32-bit Instruction Set Architecture using Verilog HDL is designed and the components is implemented in Field Programmable Gate Array (FPGA).Each and every modules are expected to be checked in Spartan3E family FPGA board.

KEYWORDS- Digital signal processor, FPGA, Verilog HDL

Output Power Control of Double Fed Induction Generator by Pitch Angle Control

Bijaya Kumar Mohapatra,Sunita Pahadsingh, Subhasish Mohanty
Gandhi Institute For Education and Technology, Baniatangi, Bhubaneswar

Abstract:

Characteristics of wind energy is such that it varies randomly and the windmill output is proportional to the cube of wind speed, which causes the generated output power fluctuation in wind turbine generator (WTG). The generated output power fluctuation increases relative to the increase in installation capacity of the WTGs. So as to reduce fluctuation and variation in output different methods are available to control the pitch angle of blades of windmill. Pitch angle is maintained under limits through a control strategy based on the average wind speed and standard deviation of wind speed. Thus a controlled output power is achieved.

KEYWORDS: Permanent magnet synchronous generator(PMSG), Synchronous generator (SG), Double fed induction generator(DFIG) and WTG(Wind turbine generator) MATLAB/SIMULINK etc.

Ocean Wave Energy: A Step towards Recharging Batteries

Sushil Kumar Pati, Padmalochan Prusty, Nabnit Panigrahi, Stita Prangna Mishra, D.Subramani
Gandhi Institute for Education and Technology, Baniatangi, Bhubaneswar

ABSTRACT:

In the earth's ecology the bulk energy resources are renewable energy. Some of cannot exploit wave energy efficiently on commercial scale. Our them are solar, wind and ocean energies. Ocean energy contains merely of oceanic thermal energy, tidal and wave energies. Wave energy is mainly focused due to immense energy densities, colossal potentials and anticipations. Existing technologies paper explains the experimental work over exploitation of wave energy throughout the world's coastline. The global estimation of practical prospective is approximately500GW based on a conversion efficiency of at least 35-40%. Wave power means the energy capture of waves ocean surface. The device that is able to convert any wave energy into power through its capability, then it is called a Ocean Wave Energy Converter (OWEC). The principal of operation of this device is to convert vertical heave dispersion into a rotational action which generates electricity. This electrical power can be stored in batteries and also to recharge them. As the wave energy is pollution free, reliable, and incessant which reduces our dependence on fuels.

KEYWORDS: Ocean Wave Energy, Power Storage, Rechargeable batteries, Renewable energy, Wave Energy Converter

Feasibility Study of Floating Solar Photovoltaic Plant at Mukutmanipur in West Bengal, India

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ABSTRACT:

In recent times energy demand is continuously increasing due to rapid growth of population and its consequence is rapid diminishing of fossil fuels which lead to shift our focus to renewable energy resources. To ensure new renewable energy for sustainable future, many developing countries are shifting towards floating solar photovoltaic (FPV) system. It is a newly developed system of solar-energy generation utilizing water body available on dams, reservoirs etc. where the FPV are fitted over the water body. It does not deplete any land surface as it occupies only water surfaces. Cleaning and cooling related difficulties which occur in regular photovoltaic plant, do not arise in this kind of plant. It also minimizes the evaporation loss which occurs in open water surface. The study demonstrates the current FPV technologies which are utilized for energy generation all around the world. A case study related to feasibility of installing 0.5 MW FPV plant at Mukutmanipur lake in West Bengal has been presented in this study. brief discussion has been carried out in terms of energy generation, minimization of evaporation loss and amount of emission of CO2 which could be reduced as compared to the conventional thermal power plant, have been evaluated. It is found that in every year the FPV plant can generate 912 MWh energy, recover 18 million litres of water and reduce 832 tonnes of CO2 emissions.

KEYWORDS— FPV, Floating structure, Evaporation loss, Water reservoir, Lake, Power generation

Mechanisms linked to demonstrate block chain in IoT : A Survey

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ABSTRACT:

The Internet of Things in general linked and focused with artificial intelligence, real-time analytics, machine learning, sensors along with cloud storage. It may be associated with creating new thoughts and prospects along with its merits for businesses in current and new market. In the networked structure of IoT, the block chain may be associated to monitor the relevant records linked with smart devices. This underlying technology through which bit coin and other crypto currencies work is called block chain. Bit coin or any other crypto currency is just one example of the application of blockchain.As a matter of fact, the block chain may be defined as the technology to chain as well as link scalability, privacy, and reliability concerns associated with internet of . In practical situation, the IoT applications in block chain being decentralized may be more useful and may eradicate the associated complexities. Also, it may be more faithful towards centralized, brokered communication models with the challenges to secure IoT deployments.. Being associated with the cloud architecture, sometimes it may be very sensitive during storage of large amount of data in the cloud. Considering the block chain applications in IoT , it may be observed that the automobile industries mostly may be associated with block chain as it may be considered as a part-intensive industry. The centralized supply chain and trust-based distribution may be the recent innovation achieve new technologies and may be automatically updated to maintain the records. In this context, it may also be associated with multi-layered and may involve towards device authentication and verification of transactions. As being observed, the storage associated with block chain may be quite expensive and the amounts of IoT data sometimes may be increased continuously. Therefore, in this work, it has been thought of to include inter-serviced managed system(ISMS) to generalize the solution. It may be treated as distributed peer-to-peer file system, and maybe employed to manage file systems with heterogeneity.

KEYWORDS : Big data, Block chain, Public Key, Actuator, Throughput, ISMS, IoT deployment

DESIGN AND CONTROL OF 11-LEVEL MMC INVERTER WITH D-STATCOM CAPABILITY FOR GRID CONNECTED PV SYSTEM

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ABSTRACT:

In this paper, modular multilevel converter is used as the desired topology to meet all the requirements of a single-phase system such as compatibility with IEEE standards, total harmonic distortion (THD), efficiency, and total cost of the system. The proposed control strategy regulates the active and reactive power using power angle and modulation index, respectively. The function of the proposed inverter is to transfer active power to the grid as well as keeping the PF of the local power lines constant at a target PF regardless of the incoming active power from the wind turbine. The simulations for an 11-level inverter have been done in MATLAB/Simulink. To validate the simulation results, a scaled prototype model of the proposed inverter has been built and tested.

KEYWORDS— MMC,THD,ANN

DETECTION AND CLASSIFICATION OF FAULT IN DISTRIBUTED GENERATION NETWORK USING NEURO-FUZZY TECHNIQUE

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ABSTRACT:

It is imperative to improve the performance of micro grid and detect the fault disturbances and for the classification of different types of faults novel technique has been introduced. Two 12 mw wind firm are connected to a 25kv distribution system exporting power to a 120kv grid. For accurate classification of various fault Neuro –Fuzzy technique is implemented [3-21]. One practically applicable hybrid system [1] for the protection analysis purpose is simulated using MATLAB/Simulink 2018a environment, for classification of fault and is done using one of the hybrid intelligence technique called Neuro-fuzzy.

KEYWORDS— DFIG,FFNN,NF,DG,ANN,BP,THD

Different PLL Performance and Investigation forUtility Connected System under Distorted GridCondition

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ABSTRACT:

The operation of grid side converter is significant in its robust control design. Phase locked loop (PLL) circuit is introduce to tracks continuously, the fundamental angular frequency of the grid side voltage. The control design depends on quick and exact tracking of phase angle of grid voltage. The task of PLL is condition, since grid connected system is to operate the power system under grid fault conditions. The main objective of the PLL is to extract positive and negative fundamental voltage in a precise manner during distorted grid conditions. There are many PLL techniques introduced in the past decades. Some of the techniques only give good results in normal grid voltage, and some techniques give good results in both normal and abnormal grid voltage conditions. This paper deals with performance and investigation of different grid interactive PLL techniques in the unbalanced supply voltage conditions. The performance of a Double Synchronous Reference Frame PLL(DSRF-PLL), a Decoupled Double Synchronous Reference Frame PLL (DDSRF-PLL) and a Voltage Reforming Synchronous Reference Frame PLL (VRSRFPLL) shows better quicker performance than the other PLL techniques. The analysis of different PLL techniques is compared and the results are shown in Matlab/Simulink.

KEYWORDS— PLL, SRF, DDSRF PLL,VRSRF-PLL

Dynamic Stability Improvement methods and THD Analysis in Power systems for a SMIB System.

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ABSTRACT:

Power systems are subjected to low frequency disturbances that might cause loss of synchronism and an eventual breakdown of entire system. The oscillations, which are typically in the frequency range of 0.2 to 3.0Hz, might be excited by the disturbances in the system or, in some cases, might even build up spontaneously. These oscillations limit the power transmission capability of a network and, sometimes, even cause a loss of synchronism and an eventual breakdown of the entire system. For this purpose, Power system stabilizers (PSS)are used to generate supplementary control signals for the excitation system in order to damp these low frequency power system oscillations. The use of power system stabilizers has become very common in operation of large electric power systems. The conventional PSS which uses lead-lag compensation, where gain settings designed for specific operating conditions, is giving poor performance under different loading conditions. The constantly changing nature of power system makes the design of CPSS a difficult task. In an attempt to cover a wide range of operating conditions, Fuzzy logic based technique has been suggested as a possible solution to overcome the above problem, thereby using this technique complex system mathematical model can be avoided, while giving good performance under different operating conditions.

Modified Whale Optimisation Technique for Combined Objective of Speed Control and Torque Ripple Minimization of Switched Reluctance Motor Drive

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ABSTRACT:

In the present work metaheuristic technique such as modified Hybrid Whale Optimization Algorithm (mWOA) is used for speed control along with torque ripple minimization of 75 KW, 4-phase 8/6 Switched Reluctance Motor
abbreviated as SRM. The objective is to develop a controller for objective of speed control along with ripple minimization in the output torque of the Switched Reluctance Motor (SRM). Various performance parameters such as gain of proportional controller & gain of integral controller of speed controller, proportional gain and integral gain of current controller with turn off angle , turn on angle values are considered for performance assessment of SRM. A comparison is made of the performance of SRM with implementation of modified Whale Optimization Algorithm (mWOA) and Whale Optimization Algorithm (WOA) .It is seen that coefficient of torque ripple, ISE of current and objective function is reduced by mWOA algorithm as compared to WOA.

KEYWORDS: Whale Optimization Algorithm (WOA), Modified Whale Optimization Algorithm (mWOA), Switch reluctance motor (SRM); Torque ripple; Proportional integral (PI) controller.

Demonstration and Simulation of Brushless Direct Current Motor

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ABSTRACT:

In this paper, the performance of a Brushless Direct Current Motor is simulated with the help of the software MATLAB using some basic theories and its practical features. This helps simulate the corresponding model for the BLDC with ease. The output of BLDC motor performance which was obtained in MATLAB can be evaluated under various input parameters ,critically in the software environment. The accuracy of the model can be verified by comparing the results obtained from simulation with the actual BLDC model . The construction of the BLDC Motor is briefly discussed.

KEYWORDS: BLDC , PMBLDC ,Modeling , Construction

Analysis of SSSC for Reversing power flow &illustration with simulations

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ABSTRACT:

The Static Synchronous Series Compensator (SSSC) also known as Series FACT controller, due to its superior abilities over the impedance-based series compensation becomes more attractive. This paper is basically on two control schemes of the SSSC for the power flow control. They are Reactance Emulation Scheme and Quadrature Voltage Control Scheme. In the first scheme , (which is called Reactance Emulation Scheme) the SSSC performs a function of the series impedance connected to the transmission line. The above performance can be achieved by controlling the quadrature voltage of the SSSC in relation to the transmission line current, and the required series impedance compensation. In the second control scheme, (which is called Quadrature Voltage Control Scheme) the SSSC injects a quadrature voltage into the transmission line. This paper shows voltage, current, active power, reactive power waveform simulation in Matlab. There are three modes of compensation, which are capacitive compensation, inductive compensation, and reverse power flow, and can be achieved by controlling the phase angle relationship between the injected voltage phasor and line current phasor, and the magnitude of the compensated voltage.

KEYWORDS: SSSC, Reverse power flow controller ,VSC ,FACTS Controller

Performance analysis of engineering polymers in automotive components: An Interactive approach of Tool design

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ABSTRACT:

The top priority is to sustain into the today's competitive market is to minimize the cost and time allotted for part production. It also significance area of concern to save energy and resources for sustainability. The most important is to select correct choices of conversion technology for part production with specified constraints to meet global standards and quality. The injection moulding process is sensitivity to deliver the quality parts in terms of dimensional accuracy, shrinkage, war page, voids & surface finish, etc. It depends upon the part geometry and design, tool design, polymer and its process characteristics. In this study experimental verification carried out with the tool design, and simulation made through mould flow plastic advisor to get improved tool design considerations with respect to injection moulding process parameters. The result shows shrink-ability, war-page, voids, weld-line positions are get effectively improved. Finally the tool design is being modified and optimized w.r.t. the simulation results and proceed for manufacturing.

KEYWORDS : Tool design, Injection molding process, Moldflow Plastic Advisor

Optimal Resource Allocation To Improve Energy Efficiency of Cognitive Radio Based Vehicular Ad-hoc Network Under Imperfect Sensing

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ABSTRACT:

The evolution of wireless communication from fourth generation (4G) to fifth generation (5G) is envisioning massive growth in application of vehicular ad-hoc network (VANET) based on cognitive radio (CR) technology. In this VANET, fast and efficient spectrum sensing techniques are required to co-exist with heterogeneous network. Most of the current applications are done with assuming perfect carrier sensing, but in actual practice channel sensing is imperfect. We have investigated the performance under imperfect sensing, so as to exactly analyse the key concern of co-existance i.e. the average/peak transmission power constraints of secondary user (SU) and average interference power constraints of primary user (PU). However to alleviate these concerns, we need to have optimum resource allocation, to improve the capacity and energy efficiency of this VANET. To solve the resource allocation and power problem, we have investigated two popular cooperative relay transmission schemes i.e. amplify-and-forward (AF) and decode-and-forward (DF). Moreover we have analytically obtain required transmission rates for both primary and secondary networks for this AF and DF schemes. In addition to this, we have also develop the new optimal power-bandwidth allocation strategies for the CR based co-operative relay protocol to maximize the capacity and energy (EE) of the VANET. The matlab simulation results are included to validate the correctness of the analysis.

KEYWORDS—4G,5G,AF,CR,DF,EE,PU,SU,VANET

A COMPARATIVE ANALYSIS OF CONVENTIONAL AND EMERGING MPPT TECHNIQUES FOR INTERLEVED SOFT SWITCHING BOOST CONVERTER

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ABSTRACT:

Now a days, renewable energy sources have become a popular alternative electrical energy source, even governments are also making plans towards increasing the amount of power generation from renewable energy sources because viability and crisis of conventional energy sources will increase. In addition to this government liberalization and technical developments encourage the use of renewable energy sources. This thesis deals with a PV energy system which is an alternative for conventional source of electrical energy like other renewable energy sources viz. thermal and hydro power generation. Here power extracts from the incoming son light radiation calling solar energy. It deals with the design and hardware implementation of a simple and efficient solar photovoltaic power generation system. The photovoltaic generator exhibits non-linear V-I characteristics and its maximum-power point varies with solar isolation. So a simple control technique is adopted here, which is cost effective has been proposed to track the operating point at which maximum power can be coerced from the PV system under continuously changing environmental conditions. Solar Photovoltaic (PV) power generation system is compromising several elements like solar cells, DC/DC converter, Maximum power point tracking circuit, battery charge controller and the loads. A software simulation model is developed in MATLAB/Simulink. This paper proposes two new maximum power point tracking algorithm i.e. whale optimization(WOA) and grey wolf optimization (GWO) technique for efficient extraction of maximum power from a photovoltaic system subjected to rapid variation of solar irradiance and partial shading conditions. WOA and GWO handles the initial stages of MPPT followed by application of the P&O algorithm at the final stage in view of achieving faster convergence to the global peak (GP). To compare the performance P and O, WOA and GWO MPPT algorithms are also simulated and results are also presented. From the results, it is noticed that proposed MPPT method is superior to other MPPT methods with reference to accuracy and tracking speed.

KEYWORDS— solar PV, MPPT, soft-switching, optimization

Energy Efficient Two Tier Cluster Based Protocol for Wireless Sensor Network

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ABSTRACT:

One of the task of sensor networks is to monitor and collect data in a geographical region. The random distribution of sensor nodes causes the coverage area to be of a high importance. The limited energy resources of sensor nodes in Wireless network is a great concerned for design of the system. The data are collected by its surrounding nodes and send to its cluster head. The cluster heads are cooperatively transmitted data to the base station. The ability of performing task is depends on the available residual energy of the nodes . The energy efficient two tier region based (EETRB) protocol used to partitioned the network into different levels. By increasing number of cluster heads at different state of the network level enhances the residual energy of node. The proposed protocol simulation result shows that on increasing the network size with respect to area and number of nodes using Sleep and Wakeup concept the life time of network increases. The life time of network improves around 70% and reduces overhead and improves stability period of the network.

KEYWORDS—Wireless sensor network, Base Station, Cluster Head, Network lifetime.

Speed control of DC servomotor using Chopper based PI Controller

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ABSTRACT:

The most widely used control strategy in industry is PID. The effectiveness of PI controller is increased by tuning of it (Ziegler-Nicholas Method). Using PID and Ziegler-nicholos controllers, speed control of industrial applications are not controlled in prescribed manner. Fuzzy controller is better than Ziegler-Nicholas controller but rise time is high. In this work, speed control of DC Servomotor is controlled by Chopper based PI Controller which is controlling time domain parameters such as rise time, settling time, peak amplitude, over shoot, oscillations. Simulation results of speed control of DC servomotor using PI, Ziegler-Nicholas controller, Fuzzy controller, Chopper based PI controller are demonstrated.

KEYWORDS: Ziegler-Nicholas controller, Fuzzy controller, DC servomotor, chopper based PI controller.

DC servomotor speed control with a PI controller based on a chopper

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ABSTRACT:

PID is the control approach that is most frequently employed in industry. By fine-tuning the PI controller (using the Ziegler-Nicholas Method), one can boost its effectiveness. Industrial applications' speed control is not regulated in a defined way while using PID and Ziegler-Nicholos controllers. Although it has a longer rise time, the fuzzy controller outperforms the Ziegler-Nicholas controller. In this study, a chopper-based PI controller that regulates time domain parameters such rise time, settling time, peak amplitude, overshoot, and oscillations is in charge of DC servomotor speed control. The simulation results for controlling the speed of a DC servomotor with PI, Ziegler-Nicholas, fuzzy, and Chopper-b ased PI controllers are presented.

KEYWORDS— Ziegler-Nicholas controller, Fuzzy controller, DC servomotor, chopper based PI controller.

Harmonic Analysis and Grid Interaction of PMSG driven Wind Turbine

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ABSTRACT:

This paper presents modelling ,simulation& THD analysis of wind driven PMSG(permanent magnet synchronous generator) connected to three phase series RLC load and grid In the wind energy conservation system, the wind turbine takes energy from wind . Then the generator transforms it to electrical energy. Wind turbines are categorized into two types as fixed speed wind turbine and variable speed wind turbine. Variable speed wind turbines produced more energy than the fixed speed wind turbines, lessen power fluctuations and increase reactive power supply. Mostly direct drive Permanent Magnet Synchronous Generator (PMSG) and Double Fed Induction Generator (DFIG) are used in flexible speed wind turbine generator. In this paper, the simulations of a wind driven PMSG (permanent magnet synchronous generator) and power electronics devices have been used to connect to the grid & three phase load and output parameters have been analysed at variable switching instants and also studied the harmonic distortions .

KEYWORDS : Wind Energy, PMSG, ,Rotor Speed, Three Phase Circuit Breaker, THD.

Firefly Algorithm Based PID Controller for Automatic Load Frequency Control Problem

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ABSTRACT:

The automatic load frequency control problem of single area power system, two area power system and three area power systems has been presented in this paper. Each area consists of multiple units such as thermal, hydro and gas units. Initially, single area three-unit power system is considered, and the system is analyzed without and with PID controller for 10% of step load perturbation. After that, a two area six-unit power system is considered and analyzed the effectiveness of PID controller. The total study was carried out in MATLAB/SIMULINK environment.

KEYWORDS: Automatic Load frequency Control, PID Controller, Step load.

Application of PID controller based automatic generation control for interconnected power system with governor dead-band non-linearity using MOL Algorithm

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ABSTRACT:

In this papers MOL algorithm is applied for Automatic Generation Control (AGC) by using proportional-Integral derivative (PID) controller-based design in two area non-reheat with thermal interconnected power system. The governor dead-band nonlinearity is considered for purposed two area thermal power system. The two different type of objective functions Integral of Squared Error (ISE), Integral of Time multiplied by Squared Error (ITSE),) are considered at first for the design purpose than the modified objective function is used design purpose by using ISE, ISTE, ITAE, IAE and settling times of frequency and tieline power .For obtaining the dynamic performance of AGC, PID controller parameters are optimized by using MOL algorithm .Then superiority of MOL techniques verified by comparing the published result in craziness based particle swarm optimization(CPSO) based design of interconnected power system. It is analyzed that performance of MOL based PI controller is better than CPSO based PI controller.

KEYWORDS: automatic generation control, PID controller algorithm, Governor dead-band nonlinearity

IMAGE MOTION BLUR USING PYTHON

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ABSTRACT:

Image motion blur found in several image processing techniques. In this paper, we take pre-processed Devanagari images and extend the PSF technique and generate two dimensional motions and produce motion from blurred images and plotted using math plot library. The open cv library is used to read the image and apply Gaussian filter on images. PSF image recovery is done by finding motion parameters to maximize correlation. Different image processing techniques are applied to the images: rotation, translation, Gaussian filter.

KEYWORDS: Image motion blur, PSF, open cv, mat plot library, Gaussian filter.

Compact four-element SRR-loaded dual band MIMO antenna for WLAN/WiMAX/WiFi/4G-LTE and 5G applications

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ABSTRACT:

A four-element dual-band MIMO configuration consisting of split-ring resonator (SRR)-loaded inverted L-monopole antenna elements is realised. In the proposed antenna, the lower-frequency mode of the unloaded MIMO configuration merges with one SRR-induced antenna resonance. This leads to antenna operation around 2.93 GHz with wide impedance bandwidth (IBW) of 35.21%, encompassing the lower WLAN, worldwide interoperability for microwave access, wireless fidelity, fourth generation (4G)-long-term evolution and sub-6 GHz 5G bands. Furthermore, due to SRR loading, the proposed MIMO antenna exhibits a resonance at 5.68 GHz (IBW 6.86%), covering the upper WLAN band. Minimum inter-element isolation of 14 dB is achieved, in spite of the compact total area (0.103l2 0, λ0 = highest operating wavelength) and the presence of inter-connected ground plane. Both the working bands exhibit directional radiation patterns with average gain ≈ 4 dBi. Experiments on the fabricated antenna prototype confirm that the simulated and measured S-parameters, radiation patterns (envelope-correlation coefficient, channel capacity loss and total active reflection coefficient) are in good agreement.

Differentiating Storage Essentiality in Thermoelectric and Non Thermoelectric Integrated Conventional Micro grid

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ABSTRACT:

The inflation of clean, efficient, sustainable, effective, secure and reliable electricity demand have been triggered much interest for Microgrid (MG) at a miraculous and quickened pace. The necessity of reliability enhancement, diversity of fuel, cutback of greenhouse gases, severe weather fluctuation etc. has stimulated the inclusion of MG concept not only in utility level but also in customer and community level. Incorporation of solar photovoltaic (SPV) and thermoelectric (TE), termed as Solar photovoltaic-thermoelectric (SPV-TE) hybrid system is found be a very promising technique to broadening the utilization of solar spectrum and enhancing the power output effectively-cum-efficiently. This hybrid architecture caters electrical energy with additional thermal energy that signifies upon harnessing of solar insolation in an exceptional way. But in order to retain the voltage profile in the permissible level, MG needs storage mechanism for smoothening of renewable based power inconstancy, catering significantly high active power and dodging the long term reactive power rising. This paper illustrates the comparative analysis of two systems such as Conventional MG; TE coupled Conventional MG defining the necessity of employment of energy storage system (ESS). The superiority of proposed system has been outlined in terms of lesser complexity in source integration, mitigating the detriment of WES and FCT integration in real life application, delivery of higher active power and lesser reactive power absorbance over the other system. The studied system is modelled in MATLAB/Simulink environment and the results are presented to support, verify and validate the analysis.

KEYWORDS: Solar PV system, TEG, Nonconventional Distribution Generation, wind energy system, reactive power, active power.

Power Extraction from several Interconnecting Solar PV Networks for an Electrically Integrated TEG system under weather fluctuation

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ABSTRACT:

With the extensive demand for energy harvesting systems from various renewable resources, researches have been carried out in several areas among which thermo-electric generator (TEG) based system is an emerging one. In this paper, eight solar PV modules are interconnected in numerous fashions in order to investigate the behavior of the hybrid system. The transiency of the solar PV modules inside the network has been examined under Healthy Irradiance and Sectional Irradiance. Rise in solar concentration tends to decrease the solar PV module efficiency and this curse to solar PV becomes the boon to the TEG giving rise to higher power output at the terminals. Incorporation of solar photovoltaic (SPV) and thermoelectric (TE), termed as Solar photovoltaic-thermoelectric (SPV-TE) hybrid system is found be a very promising technique to broadening the utilization of solar spectrum and enhancing the power output effectively-cum-efficiently. This hybrid architecture caters electrical energy with additional thermal energy that signifies upon harnessing of solar insolation in an exceptional way.

.KEYWORDS: Hybrid System (SPV+TEG); thermoelectric generator; operating temperature; PV networking; power generation

Identification and analysis of different parameters for Eddy Current Braking System along with its applications

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ABSTRACT:

Eddy current braking has more advantages as compared to mechanical braking. This research showcases the mechanism behind Eddy current braking system, its torque-speed characteristics along with other structure parameters which affect its performance.

KEYWORDS— air-gap length; torque-speed characteristics, eddy current breaking, automotive vehicle

Comparison of neural network models for weather forecasting

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ABSTRACT:

Weather forecasting has a big impact on people's lives from event planning to cultivation. Conventionally, it has been performed by simulating physical conditions of the atmosphere. Due to nonlinear and irregular kind of weather data, machine learning methodologies can be seen as an alternative of the physical model for forecasting weather. This paper explores the potential of deep neural networks in the field of weather prediction. It compares the performance of two different neural network models. First model uses the feed-forward network while other uses recurrent neural network to feed the weather data. The models illustrate that neural network models are emulative with the conventional methods and can be perused as a better alternative to predict general meteorological conditions.

KEYWORDS—Forecast; Machine Learning; Deep learning; Weather

Study on Invariant Analysis in Concurrent Program

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ABSTRACT:

Every software system is generally bugged prone. Concurrent programs are bug prone because of their non-deterministic nature and lack of repeatability. A number of techniques are available for detecting such type of concurrent bugs. Out of them Invariant analysis is one of the effective technique. Various tools are used for finding invariants like Udon tool, Daikon tool, IODINE tool etc. The study of different techniques provides idea of reducing runtime overhead and detecting the various concurrent bugs. We come to know about the strengths and weaknesses of various tools used for detecting concurrent bugs. A comparative study is done among various techniques for invariant based bug detection.

KEYWORDS—Invariant, Concurrent Program, Function Call Graph, Graphviz, Daikon

A Review on Application of Supervised Learning Algorithm in Agriculture Sector

Satyajit Mohanty, Himanshu Shekhar Maharana, Stita Prangna Mishra, Satyaranjan Mishra, Kommu Naveen
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ABSTRACT:

Cultivation and food production of any nation depends upon its environment and soil. Various other factors such as moisture, temperature, humidity and type and depth of soil largely affects the production process. Time to time climate and versatility also affects the performance of crop production in our country. Therefore, developing the present techniques in predicting the type of crop that can be grown in the field needs to be addressed with machine learning. This paper presents a review report on application of Machine Learning in the Agriculture sector.

KEYWORDS— Supervised Learning, Unsupervised Learning, Support Vector Machine

Transient behaviour of Leadscrew driven by Stepper Actuator for robot manipulator applications

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ABSTRACT:

This paper manifests an approach to design a robot manipulator with stepper actuator and lead-screw. The stepper actuator and lead-screw plays a significant role in robotics applications. The current work involves the integration of lead-screw to the stepper actuator and analysis of dynamic behaviour of both the stepper motor and lead-screw with different load conditions. The stepper actuator operated the lead-screw with rated load. When the load is greater than the electromagnetic torque of the stepper, it is observed that it is unable to run the lead-screw. It is also observed that the leadscrew behaves as zero order instruments, which projects it as a low cost high efficiency actuator in robotic applications.

KEYWORDS: Performance analysis, Stepper Actuator, Lead-screw, Zero order Instrument.

Integration of Renewable Energy Sources in Smart Grid for better Demand Side Management

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ABSTRACT:

Smart Grid is an evolved grid, characterized by a two way flow of electricity and information and built on advanced infrastructure which is capable of monitoring load supply and demand from utility to the end users on real time basis. Our work is focused on establishment of a Smart Micro Grid at Solar Energy Centre (at present NISE) which integrates both the conventional energy sources and renewable energy sources through a centralized controller. This system tries to manage the energy generation and demand through wireless communication technology between generation and demand and supports for energy saving. Because of real time monitoring of energy generation from renewable energy sources through Intelligent Energy Monitoring Unit (IEMU). there is an improvement of energy generation from renewable energy sources through immediate attention to the faults. It has been found that continuous monitoring of the photovoltaic plant leads to a minimum average increase in energy generation in the order of 1 unit of energy per day per kWp photovoltaic power plant. The smart management not only save energy but also utilize the renewable energy at a maximum level and helps in better load management at the end users point.

KEYWORDS: Smart Grid, Intelligent Energy Monitoring Unit (IEMU), Photovoltaic

Performance improvement of unified power quality conditioner by integrating a solar PV based distributed generation system across its DC-link side

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ABSTRACT:

This paper proposes a combined photovoltaic (PV) and unified power quality conditioner (UPQC) for compensation of source voltage deficiencies basically sag and reduction of harmonics in source current. “Now a day’s power quality (PQ) issue is one of the main technical challenges in any power system. In order to provide improved PQ of energy supply, it is necessary to analyze the harmonics distortion of the system as well as the voltage sag and swell. The UPQC has been extensively useful and it is verified to be the best solution to diminish this PQ issue.” However, the operation of UPQC is also depends upon the DC-link voltage value. Likewise, if the DC-link voltage is not constant, it its performance will decrease. This paper explore the detail of PQ impacts in PV connected UPQC system for improving the performance in terms of harmonics mitigation and voltage sag compensation. “The proposed model is developed in MATLAB/SIMULINKR and the result obtained validates the superiority of proposed technique over others in terms of harmonics elimination and sag compensation.

KEYWORDS: Distributed generation, power quality, harmonics, sag, MSRF

NAVIGATION OF TWO-WHEELED INVERTED PENDULUM ROBOT USING HYBRID FUZZY AI BASED CONTROL SCHEME: A SYSTEMIC REVIEW

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ABSTRACT:

The unique stability control required to keep a two-wheeled inverted pendulum robot in an upright position discriminate it from the traditional forms of robots. The two-wheeled robotic platform has the ability to spin on the spot and offers improved stability for tall structures with lesser footprints in better agility. So it can traverse small steps and curves in various terrains with additional manoeuvre ability. This paper describes an overview of various AI based navigational strategies practiced by several researchers using hybrid fuzzy inference control scheme. By implementing this approach the robot can safely reach the target by avoiding the static as well as dynamic obstacles present in a cluttered environment.

KEYWORDS: Two-Wheeled Inverted Pendulum Robot, Navigation, Hybrid Fuzzy Inference Control Scheme, AI Techniques

Forecasting of Photovoltaic outputs using the Artificial Neural Network (ANN) Technology

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ABSTRACT:

The performance and controlling strategy of small solar power plants can be enhanced when predictable solar data is utilized accurately. The measured data of nearby solar photovoltaic (PV) power plant and the collected data of local meteorological division are used for nonlinear autoregressive with exogenous model of artificial neural network (ANN). The consequences within the model prediction performance are determined to optimize the input parameters. Subsequently picking out the input parameters by means of the most excellent system investigation, the predictions for a number of days or months in advance are experimented to validate the model predicting accurateness for unusual time durations and it is compared by means of the perseverance model. This advanced model obviously better than the previous model and gives 2.9% and 3.8% root mean square error for the expectation of the one day and one year predictions respectively.

KEYWORDS: ANN, Exogenous Model, Photovoltaic, Time Series Forecasting

Noise Suppression in Non-stationary Signals using Adaptive Techniques

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ABSTRACT:

The physical signals are inherently in nature. The noise may be due to external environment or physiological change. These signals are non-stationary. Though it is a difficult task to suppress noise from non-stationary signals, enormous works have been done using different algorithms including LMS. In this work consider two cases. (a) Speech signal (b) cardiac signal. In variant of least mean square are used for verification including LMS, NLMS and DLMS. Gaussian noise is considered for speech signal due to environmental effect whereas impulsive noise is taken for ECG signal, due to either artificial(cardiac) or spikes occurrence at the time of data acquisition. For current scenario of pipelining and parallel processing, authors have suggested delayed LMS for both the types of noises and found better performance in terms of SNR, stability and convergence as compared to NLMS and LMS.

KEYWORDS- Adaptive filter, LMS, NLMS, DLMS, DNLMS.

Mechanical and Tribological properties of nanometer ZnO filled natural fiber reinforced composites: A review

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ABSTRACT:

These days, natural fibers have been in the interest of researchers because of their low cost, availability, sustainability, renewable and biodegradable properties and this can be easily utilized as reinforcement in polymer composite. Many research work is ongoing worldwide to improve mechanical and tribological properties of these engineered bio composites by filling appropriate amount of inorganic nano particles into polymer matrix such as ZrO2, SiO2, CuS, ZnO, CuO and TiO2 and has demonstrated their promise in a wide range of applications in construction, packaging, furniture, and automotive industries and bio-technological fields. The purpose of this review is to discuss the mechanical and tribological properties of the nano filled natural reinforced composite and their applications.

KEYWORDS— Zinc oxide nanoparticles, natural fiber, mechanical property, tribological property

Modelling of Power Optimiser for Rooftop Solar Power Plant in Different Operating Conditions with Centralized Monitoring System

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ABSTRACT:

Renewable energy provides reliable power supplies and fuel diversification, which enhances energy security in the case of an on-grid system, lowers the risk of fuel spills and reduces the need for imported fuels. India has a very less quantity of coal, oil, and gas for generating electricity. So Renewable energy also helps conserve the nation's natural resources. After seeing this environmental pollution, the Indian Government has the target for Solar Capacity is 100 GW by 2022, but from this target of capacity, 40 GW is likely to be achieved by the installation of Rooftop Solar Project form residential or any roofs. The designed DC-DC Converter, which includes Maximum Power Point Tracking, to maximize the energy harvest from solar photovoltaic. The generation of electricity, is very less in rooftop PV due to various reasons like the Shadow effect, due to improper design with Azimuth Angle or underperformance of any Solar Module in the Array. They do this by individually tuning the performance of the solar panel through MPPT, and optionally tuning the output to match the performance of the string inverter. The generation of electricity from a rooftop solar power plant and also uses of electricity can be monitored through a centralized monitoring system. The system will very useful for the Rural and Urban residents as well as DISCOM. The resident's loads can becontrolled when will run from a grid or from rooftop solar power.

KEYWORDS—MATLAB, Solar cell model, PV, MPPT, DC-DC Converter, HTML, CSS, JAVA Script

Combined frequency and voltage control of a multi-area renewable-based multi-source interconnected power system

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ABSTRACT:

This article investigates combined automatic load frequency control (ALFC) and automatic voltage regulator (AVR) interrelated multi-area multi-power sources system with integration of thermal, solar thermal plant (SHP) and small hydro plant (SHP) in each area. Requisite physical nonlinearities of an actual running plant are reflected in plants taken under consideration. A maiden effort has been made to integrate the multi-stage controller in combined frequency and voltage regulation. A simple yet effective optimization technique named as Jaya algorithm has engaged for optimization of controller parameters. A step load of 1% is applied to the system to simulate a real time environment. A diverse controller such as the two-degree-of-freedom proportional-integral-derivative (TDOFPID) controller and PID controller with filter (nPID) has been incorporated in the system to verify the inter-connected system with that of the multi-stage controller. The efficient controller shows the improved response in terms of over/undershoot and settling time in both frequency and terminal voltage variation. The dynamic interaction of the optimization algorithm with the proposed controller arrangement demonstrates noteworthy enhancement on the system reaction than TDOPID and nPID controller.

KEYWORDS— automatic load frequency control, automatic voltage regulator, solar thermal plant, small hydro plant, multi-stage controller

Space Shift Keying Modulation for MIMO Channels

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ABSTRACT:

In this thesis, we analyze modulation techniques that exploit multiple antennas in wireless communication. We first study the so-called spatial modulation (SM) technique for MIMO channels. Since the original SM detector is based on an ad hoc design, and only functions under some artificial assumptions about the channel, we derive the optimal detector for SM. The new detector performs significantly better than the original (~ 4 dB gain), and we support our results by deriving a closed form expression for the average bit error probability. As well, we show that SM with the optimal detector achieves better performance gains that can be (~ 1.5 — 3 dB) over popular multiple antenna systems. We then introduce space shift keying (SSK), a new modulation scheme based on the SM concept. SSK exploits fading in multiple input multiple output (MIMO) channels to provide better performance over conventional amplitude/phase modulation (APM) techniques. In SSK, only the antenna indices, and not the symbols themselves, relay information. This absence of symbol information eliminates the transceiver elements necessary for APM transmission and detection (such as coherent detectors). As well, the simplicity involved in modulation reduces detection complexity compared to that of SM, while achieving almost identical performance gains. Throughout the thesis, we illustrate SSK's strength by studying its interaction with the fading channel, and obtain tight upper bounds on bit error probability. To improve performance, adaptive forms of SSK are also presented, including a symbol design technique, and an antenna selection scheme. We also illustrate SSK's performance under channel estimation error, and spatial correlation. Analytical and simulation results show performance gains over APM systems (3 dB at a bit error rate of 1CT5), making SSK an interesting candidate for wireless applications.

KEYWORDS- SM, SSK, MIMO, APM

Heat Transfer from Extended Surfaces

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ABSTRACT:

Theoretical studies and analysis of heat transfer from a rectangular extended surfaces and a pin finned plate studied to calculate the average Nusselt number in stream-wise, span-wise axis, fin aspect ratio and angle of inclination. The maximum increase of the average Nusselt number is found to be around 36% for pin finned plate as compared to a plain plate for the same operating conditions. This is obtained with optimal fin spacing of Sv/L = 0.2 and Sh/W = 0.25, fin height of 24 mm (H/t=8), and angle of inclination of 45o. The average Nusselt number decreases with increase in angle of inclination and also increases with increase in aspect ratio. Present study reveals that in-line and staggered arrangements do not yield appreciably different results. The maximum average Nusselt number difference between conductive and nonconductive fins is around 5 % for Sh/W= 0.33, Sv/L =0.2 at theta = 45^{o}, fin height of 6 mm (H/t=2).

KEYWORDS: Natural heat transfer, pin fin arrays, Nusselt Number, plate-fin heat Laminar flow, CFD.

Application of Retinex Algorithm in Single Image Dehazing

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ABSTRACT:

Dehazing is a method of getting a clear image from foggy images. Haze, fog, and smoke are the greatest reason for clarity less of the picture. Haze differentiates the level of the picture that influences the visual quality of the picture. Vision quality and degradation level of a picture are additionally influenced by air light and attenuation phenomena in the field of image processing. Dehazing method based on prior knowledge results in image degradation in terms of contrast value and colour. The estimation of the depth of the transmission map is not clear so the restoration and enhancement process fails. Hence for enhancement and colour correction Retinex algorithm is combined with Dark Channel Prior. We proposed an algorithm that adopts the non-illumination and protects colour correction estimation for visibility of the image. The image artefacts are diminished more by expanding colour constancy, local dynamic range by adjusting the local contrast adaptively depending on the depth of image details by Retinex algorithm in worst bad condition .The most center of this article is to audit the state of art of image dehazing and restore strategies for quality and degradation level of a hazy picture.

KEYWORDS: Dehazing, Dark Channel Prior model, Multi-scale Retinex with colour restoration, Enhancement

Eigenvalue Assignment for Control of Time-Delay System: A Lambert W Function Based Approach

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ABSTRACT:

Delay is the property by which the response to an input is delayed in its effect. It is an inherent phenomenon in many control engineering practices. Mathematical description of a system generally assumes that the behaviour of considered process depends only on present state. This assumption is not satisfied in the cases where considerable delay is present which and it has to be accounted. Thus information about former states is included in the mathematical description of the system. Such systems are called as time-delay systems. Presence of delay complicates system analysis. They degrade systems performance and may make the system unstable. So control of time delay systems gained much importance and many control methodologies were developed over the years. A new design method is presented for control of proportional integral (PI) controllers of first-order plants in presence of time-delay. Here, the solutions to delay differential equations, which are derived in terms of the Lambert W Function. PI controllers for first-order plants with time delays are designed by obtaining the rightmost eigen values in the infinite eigen spectrum of time-delay systems and assigning them to desired positions in the complex plane. The process is possible due to a novel property of the Lambert W function. The controllers designed using the presented method can improve the system performance and successfully stabilize an unstable plant.

KEYWORDS—Delay differential equation, Eigen value, Lambert W Function, Proportional-integral control, Time-delay,.

DISTRIBUTED NON-LINEAR SYSTEM IDENTIFICATION USING ADAPTIVE ALGORITHM

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ABSTRACT:

Behavioural study of a system is an important task in Digital Signal Processing. It is mostly used in real world environments and became an emergent research area. System identification is one of the most interesting applications for adaptive filters, especially for the Least Mean Square algorithm, due to its robustness and calculus simplicity. Based on the error signal, the filter's coefficients are updated and corrected, in order to adapt, so the output signal has the same values as the reference signal. The application enables remarkable developments and research, creating an opportunity for automation and prediction. Communication among the nodes of a network for extraction of information distributed over a network at a given node of the same network would retrieve different observations for different instant of period when the system defined at each node gives non-linear response. The objective of this project is to design such a non-linear system distributed over a network and to arrive at an estimate of the parameter of interest using adaptive algorithms through simulation results. So, in this project, we have verified the application of LMS algorithm in linear system identification in initial stage that follows for non-linear system. We also review some of the computationally efficient adaptive distributed strategies developed using Steepest-Descent algorithm. The adaptive distributed strategy is developed based on incremental techniques. The strategy addresses the problem of linear estimation in a cooperative fashion, in which nodes equipped with local computing abilities derive local estimates and share them with their predefined neighbours. Each node is allowed to communicate with its immediate neighbour in order to exploit the spatial dimension while limiting the communications burden. We also formulate distributed estimation algorithms based on diffusion protocols to implement cooperation among individual adaptive nodes. The nodes share information with their neighbours only for peer to peer protocols. It also improves performance in terms of transient and steady state mean square error. The simulation tool to be used for the accomplishment of the work is MATLAB due to its ease of availability.

KEYWORDS- LMS, NLMS, Steepest- Descent Algorithm

ATOMIZATION AND SPRAYS OF FUELS FOR IC ENGINE –A REVIEW

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ABSTRACT:

Continually increasing energy requirements, environmental concerns and energy security desires are stoutly influencing engine researchers to consider renewable fuels as alternatives to fossil fuels. Spray process being necessary in IC engine combustion, offered literature on various fuel sprays is reviewed and summarized. Equally experimental and computational research outcomes are reviewed in a detailed manner for compression ignition (CI) engine sprays and briefly for spark ignition (SI) engine sprays. The physics of basic atomization process of sprays from different injectors is incorporated to highlight the most current research findings followed by discussion highlighting the effect of physico-chemical properties on spray atomization for both fuels and fossil fuels. Diesel sprays are found to enter faster and have tapered spray plume angle and bigger droplet sizes compared to diesel. Outcome of analytical and computational models are shown to be valuable in shedding light on the real method of atomization. Still, additional studies on understanding primary atomization and the effect of fuel properties on primary atomization are required. As far as secondary atomization is concerned, changes in regimes are observed to occur at higher air-jet velocities for diesel compared to those of diesel. Evaporating sprays are analyzed that the liquid length is longer for diesel. Pure plant oil sprays with potential utilization in CI engines may possibly require alternative injector technology due to slower dispersed as compared to diesel.

KEYWORDS: I.C Engine; Atomization; Sprays; Fuels

Study of Dielectric and conductivity behaviour of PMMA/RGO polymer Nanocomposoites

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ABSTRACT:

In this paper, we report the dielectric and conduction behaviour of reduced Poly(methylmethacrylate)/ reduced graphene oxide (PMMA/rGO) nanocomposites with different wt%. The reduced grapheme oxide was synthesised by chemical vapour deposition technique. The PMMA/rGO nano-composites were prepared through a solvent casting method. X-ray diffraction and FTIR study demonstrate that the homogeneous dispersion of rGO in the PMMA matrix was realized. The frequency dependent dielectric constant was studied at frequency range from 102 Hz to 107 Hz for all compositions. The dielectric study revealed that the dielectric constant increases with increase in rGO content. Moreover, the permittivity was found to be temperature dependent in all samples. The Nyquist plot obtained from the impedance spectroscopy analysis shows that the grains are responsible for the conduction mechanism. The frequency dependent imaginary part of impedance analysis shows the relaxation peaks which shifts to higher frequencies with increase in temperatures. The relaxation mechanism of impedance study is due to the segmental motion of polymer chain along with the dipole orientation of rGO in the polymer composite. The AC conductivity spectrum of polymer composites obeys the power law and the conduction mechanisms are explained by Jump Relaxation Model. The incorporation of rGO in PMMA matrix enhances the dielectric as well as the conductivity of the PMMA which can be a suitable material for electronic application.

KEYWORDS: PMMA /RGO, dielectric study, impedance analysis, conductivity.

Morphology of the Alumina nano particles for the preparation of the KF loaded nano-γ-Al2O3 as catalyst for Conversion of biomass to fuel

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ABSTRACT:

In this paper, conversion of Industrial micro Alumina (Al2O3) of size 70 µm to nano alumina of size 23 nm was carried out by ball milling for 120 hours. Ball milling top down approach is adopted for conversion to nano from micro. It has been observed that the average size of every sample is about 1 micron might be agglomeration or coating of some other material Leaching process was carried out for removing the coating and the size is reduced to nano size.In this work, a process for the production of mahua biodiesel from mahua vegetable oil using heterogeneous catalyst was adopted during the transesterification process. The biodiesel obtained by using heterogeneous base catalyst was compared with homogeneous KOH catalyst and the result is nearly equal.

KEYWORDS: Nano particles; mahua biodiesel, heterogeneous catalyst

Optical Wave Guide: Fast and Secure Communication for Next-GenerationTechnology

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ABSTRACT:

Optical communication is an indispensable technology for current society requirements. It satisfies the short distance and long-distance communication with the help of different mode analysis of variety type of fibers. In this paper, an analytical study has been presented that can help the next generation high speed secure communication. The advantage is that, it can act as the filter in terms of signal processing and channel in terms of communication. The waveguide can satisfy in both the way. For revolutionary communication and signal processing, it is found that optical waveguide research can satisfy future generation communication. The suitable design can be used for all optical signal processing. This article can provide insight to the researchers working in this direction.

KEYWORDS: Optical fiber, Optical communication, Waveguide, Optical waveguide, Optical signal processing

PSO Solution to the Economic Dispatch Problem

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ABSTRACT:

Economic load dispatch is a Constrained optimization problem which is essential in power generation. With large interconnection of the electric networks, the energy crisis in the world and continuous rise in prices, it is very essential to reduce the running charges of the electric energy. This paper presents an application of classical particle swarm optimization to the economic load dispatch problems. The PSO algorithm is implemented to solve the economic dispatch problem for three and six-unit thermal power systems and compared the performance with the conventional algorithm.

KEYWORDS: Economic load dispatch, Particle swarm optimization (PSO), Conventional Lambda algorithm.

Automatic generation control of diverse energy source interconnected power system using Multi-orthogonal sine cosine algorithm based PD/1+PI controller

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ABSTRACT:

This paper presents the analysis of a recent controller namely PD/1+PI controller for automatic generation control of a four area diverse energy source inter-connected power system consisting of different power plants such as thermal, hydro, wind, gas and diesel units. It uses a recent optimization technique namely Multi-orthogonal Sine Cosine algorithm (MOSCA) to optimize the parameters of the PD/1+PI controller. The superiority of the PD/1+PI controller based on MOSCA is shown by comparing its results with recently published optimization techniques such as Sine Cosine algorithm (SCA), Particle Swarm Optimization (PSO) and Genetic Algorithm (GA) for the same power system. The systems include Generation rate constraints (GRC), Governor dead band (GDB) and Boiler dynamics nonlinearity. The dynamic performance of the proposed controller is checked the objective function Integral of time multiplied with absolute error (ITAE). The better dynamic response of the proposed controller is observed by comparing its results with conventional controller such as Proportional-Integral-Derivative (PID) controller and recent controllers namely two degree of freedom (2-DOF PID) controller and PD-PID controller. Finally sensitivity analysis is performed by varying the system parameters and loading conditions in the range of ±25% from their nominal values to check therobustness.

KEYWORDS—Automatic generation control (AGC), Boiler dynamics, Governor dead band (GDB), Generation rate constraint (GRC), Integral of time multiplied with absolute error (ITAE), Multi-orthogonal Sine Cosine algorithm (MOSCA), PD/1+PI Controller, Sensitivity analysis

POWER QUALITY ENHANCEMENT IN SMART GRID POWER SYSTEMS USING BUCK CONVERTER

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ABSTRACT:

Smart grids are the most efficient selection for the distribution of electrical energy in a bidirectional way. The Buck converter is one of the most essential parts of the smart grid system as it regulates the power from the renewable sources and because of its fast dynamic response, compactness and high efficiency. But the open loop controlling technique of buck converter causes instability in the system. The use of output voltage for the feedback purpose and proportional integral (PI) controller for enhancement of stability increases the demand of single loop buck converter. However, such techniques do not perform satisfactorily under load disruption and fault conditions, thereby causing transients in the output. Here, we are proposing a technique in which the current loop is cascaded with the voltage loop to minimize the transients in the output, to improve the power quality. The mathematical model for the proposed technique is tested on MATLAB-Simulink platform and the simulation results so obtained justify that the output of the proposed cascaded loop control of the buck converter results in lesser transients along with lesser settling period and peak overshoot in the output waveform as compared to the conventional single loop control of buck converter.

KEYWORDS: Single loop control system, cascade loop control system, smart grid, power quality

Concept of Green Computing linked to structural design and analysis: A case study

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ABSTRACT:

The concept of green computing is the vital issue in the current engineering application especially in the field of structural design and analysis. The huge growth in information technology in the present scenario becomes challenge to minimize the usage of power. In such case, this concept has got its own importance implementing the common approaches like designing suitable hardware and reconstruction of software methodologies. Again energy saving linked to any hardware is quite challenging task. In such case, it is intended to improve the design approach of hardware with maximum backup facilities. Considering the mechanisms of saving software energy, it is very much essential to segregate the active software with idle software. Active software fulfils its intended purpose as well and makes CPU busy in all respect, whereas the idle software essentially runs but links to specific task in the job queue only. The evaluation of algorithms as well as data structures is also considerable during structural analysis. While optimizing specific algorithms it may be required to choose the algorithms and data structures to obtain better performance. The computation associated with the solution in O(n log n) time may be better than that of O(n2) time. In such situation, operation through stack may be better than queue implementing through hash functions. The term sustainability usually means the ability to maintain good quality of structure design ensuring the future generations to access the resources. In this paper it is intended to visualize the approaches of green computing in specified applications.

KEYWORDS: Green computing, Data centers, Green house, Green design, Wi-fi scheduler

Voltage Sag Mitigation using Transformerless Dynamic Voltage Restorer

Pradyumna Kumar Sahoo, Subhendu Shekhar Sahoo, Subhasish Mohanty
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ABSTRACT:

Power quality problem is an occurrence obvious as a non-standard voltage, current or frequency that results in the failure of end use equipment. Dynamic Voltage Restorers (DVRs) are considered to be the cost effective solution for protecting sensitive loads. And further by removing the injection transformer the cost and size can be reduced but the efficiency can be improved. This paper covers modelling, analysis and simulation of a DVR using MATLAB by estimating the reference load voltage which is carried out using unit vectors. Since the DVR contains no injection transformer, it has lower loss, lower cost and it is less bulky. The control strategy is developed using Synchronous Reference Frame (SRF) theory.

KEYWORDS- Transformerless DVR, voltage sag, SRF theory, VSI.

Design and Implementation of an Internet of Things Based Prototype for Smart Home Automation System

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ABSTRACT:

The concept of automation coupled with advancement in technology and Android based smart phones have resulted in refined and smart lifestyles. When automation as a concept gets implemented via internet of things (IoT) which is concerned with accumulation /aggregation of connectivity, it gives rise to a smarter home network. In this paper, an IoT based prototype of a smart home automation is designed and implemented. The proposed prototype smart home system along with its Android App and ATmega16 as its main controller is successfully implemented and the results of the implementation are presented.

KEYWORDS— Internet of things, home automation, ATmega16

Power Quality Improvement in Smart Grid Power System Using Shunt Active Filter

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ABSTRACT:

In present scenario, the use of non-conventional energy resources and non-linear loads in to the electric grid is been increasing and it has a adverse effect on power quality issues and also energy management. As a result there will be increase in harmonic distortion, frequent switching of load and hence the flicker formation. Power quality plays a major role in smart grid design and operation. The major reason behind this is, active participation of consumers in the power sector and increased usage of non-conventional energy resources in to the smart grid. This power grid must necessarily overcome the power quality challenges, So as to avoid barriers against introduction of new technology. This paper overviews the power quality problems and presents the controlling scheme using Shunt active power filters (APF) in order to enhance power quality in the smart grid. The Simulation is carried out using MATLAB Simulink.

KEY WORDS: Non-Linear Load, Power quality, Shunt active filter, Shunt Active Filter.

Harmonics reduction Using Active Power Filter with Hysteresis Current Control

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ABSTRACT:

Due to the wide spread of power electronic equipment's, it caused an increase of the harmonic disturbances in the power systems. The nonlinear loads draw harmonic and reactive power components of current from ac mains. Current harmonics generated by nonlinear loads such as arc furnaces, adjustable speed drives, computer power supplies etc. Thus a perfect compensator is required to avoid the consequences due to harmonics. The harmonics and reactive power cause a number of undesirable effects like heating, equipment damage and Electromagnetic Interference effects in the power system. Presence of power quality problem is one of the most severe problems which leads to power losses in the distribution system, communication interference and sometimes failure of electronic equipment. To overcome problems due to harmonics, Shunt Active Power Filter (SAPF) has been considered extensively. SAPF has better harmonic compensation than the other approaches used for solving the harmonic related problems. The shunt active power filters generate the harmonic compensating currents which are equal and opposite in polarity to the harmonic currents generated by non-linear loads. The performance of the SAPF depends upon different control strategies. Several methods were proposed to generate the reference currents for the VSI in the shunt active power filter which are like d-q method, synchronous detection method, synchronous reference frame theory etc. Also the current control strategy is important as the capacitor voltage changes continuously to the changing load currents. In order to maintain it constant and to produce a switching pulse for the VSI, various current control techniques are used of which here hysteresis current control had been preferred in this paper. This paper on whole describes about SRF theory for reference current generation and hysteresis current control and also the importance of DC capacitor voltage to be maintained constant. This paper mainly deals with the performance of three phase three wire shunt active power filter based on synchronous reference frame theory and hysteresis current control. The analysis has been performed using MATLAB/SIMULINK tool.

KEYWORDS: Harmonics, Shunt Active Power filter (SAPF), Synchronous Reference frame, Hysteresis current control.

Economic evaluation of a solar photovoltaic-generator system- A case study

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ABSTRACT:

Renewable energy is the best alternative to supply electricity in off grid remote areas and in areas with frequent power cut. A study was conducted to find the feasibility of a solar photovoltaic-generator system for meeting the electrical need of the ground floor of E-block in ITER,SOA(Deemed to be University),Bhubaneswar, India (Latitude 200 29′ N, Longitude 850 82′ E). The economics of this solar photovoltaic-generator system was analysed by using a software tool HOMER and it was found that a 100 kW solar photovoltaic system in combination with a 20 kW generation system is the optimum combination for the load demand. The levelized cost of energy (LCOE) of the system was found to be $ 0.471/kWh with a net present cost (NPC) of $6, 64,685 with 20% capacity shortage.

Approach Based on Traditional Monitoring Chart & Proposed Parameters Namely SYN, ICMP and Bandwidth

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ABSTRACT:

The humongous usage of the internet and its commercial temper is enhancing vulnerability to increase the phenomena of cybercrimes. The exact tracing of cyber-harassment plays a central task in securing the computer networks. Amongst all website attacks, the DOS attack is one of the most important fulmination and blackmail to the network functionality and it has become a burning topic for the research community in the last decade. DOS attack floods the object system along with traffic by executing hellish information, which will downfall the system accordingly. As per traditional method, the detection of SYN flood attack has been discussed, which is the most popular DOS attack. In this method they have compared the detection capacity of three different monitoring charts, which are Shewhart chart, CUSUM chart and EWMA chart by using the concept of DARPA 99 Dataset. Due to disadvantage of traditional comparative monitoring charts study, which were focusing only on detecting SYN attack, we present a newly proposed method in which we will detect DOS attack by monitoring as well as filtering various online flood attacks like ICMP, Bandwidth along with SYN by expanding an accurate anomaly detection technique for information protection as well as cyber security to make system more secure.

KEYWORDS: Cyber-attacks, DOS, TCP, SYN, SYN Flood, ICMP, Bandwidth, DARPA 99, Shewart chart, CUSUM chart, EWMA chart

Investigate, Analyze & Design of real time problems in the domain of Power Electronics and Energy using MATLAB: Review and application

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ABSTRACT:

Making a different way of the archetype from classroom teaching to practical type application oriented work has been successfully implemented in this research article. This paper aims to reduce the gap between theoretical learning and practical implementation of student in a large prospective. A number of practical oriented real-time problem in the field of power electronics and electrical machines have been simulated in the MATLAB-SIMULINK platform and the most appropriate outcome have been analyzed in detail. This article also puts light on the development .

KEYWORDS:-MATLAB-SIMULINK, Power electronics, electrical machines

Silver Poly – (Vinylidene difluoride) nano composite for advanced technological application: A Review

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ABSTRACT:

This study explores the dielectric properties of Silver Poly – (Vinylidene difluoride) (PVDF) polymer nano composites. Synthesis and characterization of PVDF polymer nano composites that were carried out successfully and there nano-composites exhibited improved di-electric properties to be used in advanced technological applications. Thermo gravimetric analysis study revealed an improved thermal stability for these nano-composites

KEYWORDS: nano composites, PVDF, Thermal stability, di-electric properties.

Impulse Noise Restoration Using Combined Fuzzy Logic and Adaptive Trimmed Median Filter

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ABSTRACT:

This work focuses on the development of algorithms for the removal of impulse noise from digital images in spatial domain. Various issues related to this problem are studied for gray-scale as well as color images and suitable filtering methods are suggested. In this paper, fuzzy logic is used to detect the noisy pixel and an adaptive trimmed median filtering technique is proposed to remove the detected noisy pixel from gray and colour images. When all the pixels in a selected window are all noisy pixels, then in such cases the possible solution is to replace the processing pixel by the mean and standard deviation values of the elements in the selected window. The combined fuzzy logic and adaptive trimmed median filter approach is also used to preserve the edges and fine details of the images. To assess the performance of the proposed method, several standard gray-scale and colour test images are used in the experiments which have distinctly different features. The efficacy of the various filtering systems is evaluated in terms of PSNR and MSE for gray-scale and colour images.

KEYWORDS : Impulse noise, Fuzzy Logic, Membership function, median filter

Highly Ordered Nanotube Arrays as Photoanodes for Dye-Sensitized Solar Cells by Electrochemical Method

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ABSTRACT:

Highly ordered TiO2 nanotubes (TNTs) were fabricated by electrochemical anodization method in fluorine free perchloric acid medium. During anodization interconnected pores developed by forming amorphous/ hydroxides of titanium film. On increasing anodization, film grew in thickness and pores tend to become aligned providing surface layer of nanotubes on the electrode material. The 1-D charge carrier transport property of the tubular geometry have drawn intensive interest in using TNTs for TiO2 photovoltaic and photo catalysis applications. In this article, we briefly review our present work in the study of Iron and chromium doped TNTs fabrication by anodization and their application for dye-sensitized solar cells. By controlling the anodization process, the length, diameter and wall thickness of TNTs can be tailored. The iron and chromium doped highly ordered 1-D TNTs obtained during anodization are superior photo anodes for dye-sensitized solar cell because of its reduced inter tube connections, vertical electron transport, suppress electron recombination and enhanced current density, power conversion efficiency and light scattering. The morphology and microstructure if TNTs were investigated by SEM and X-ray diffraction analysis. Diffusion electron spectroscopy has been used to analyse the amount absorption of the dye on the surface of the various TNT, which acknowledges the direct co relation between the dye absorption and morphology of the sample.

KEYWORDS: anodization, microstructure, photo anodes, nanotubes

Sustainable Application of Meta-pentadecenyl Phenol in Rubbery Polymers: An Overview

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ABSTRACT

The Present study delineates the multifunctional additive aspects of meta-pentadecenyl phenol (cardanol) in cardanol grafted natural rubber (NR), nitrile rubber (NBR and XNBR) and styrene butadiene rubber(SBR). All the modified rubbers exhibited improved thermo mechanical and physico-mechanical properties in addition to an improvement in overall technical properties as compared to aromatic and synthetic type conventional oil plasticized counterparts. Cardanol functionalized rubbers have been characterized by spectroscopic studies, NMR and GPC analysis. Dynamic scanning calorimetry and dynamic mechanical analysis results indicated a low Tg (glass transition temperature) for cardanol functionalized rubbery polymers over oil plasticized counterparts. Thermal analysis study of these modified rubbers revealed an improved flame and fire retardant behavior that was also reflected in an increased LOI (limiting oxygen index). Moreover, cardanol grafted nitrile rubbers were found to be biocompatible and an enhanced antibacterial activity against Staphylococcus aureus and Escherichia colistrains was noticed for these polymers.

KEYWORDS: Cardanol, rubbery polymer, technical properties, limiting oxygen index, antibacterial

An Experimental Analysis to Increase Performance and to Control Emission Characteristics on Diesel Engine using Blends of Biodiesel and Diesel Additive

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ABSTRACT:

The scarcity of conventional fossil fuel, their increasing cost and the detrimental effects of combustion engendered pollutants seem to make alternative sources more appealing. Karanja (PongamiaPinata) plants are non-comestible in nature and available abundantly. Many vegetable oils have been investigated in the compression ignition engine by fuel modification or engine modification. The vegetable oil has very high density and viscosity, so we have used the biodiesel of the oil to overcome these problems. Their use in the form of methyl esters in non-modified engines has given encouraging results. The present experiment assesses the experimental analysis of a direct injection diesel engine using dissimilar blends of the methyl ester of Karanja, diesel additives like ethanol along with mineral diesel. Methyl ester and diesel additive was blended with diesel in different proportions and studied under different load conditions. The results show in different blends of diesel additive, diesel, and biodiesel positive effects on the reduction in the emissions. Efficiency and fuel consumption was better in different blends as compared to the pure diesel

KEYWORDS: Karanja Methyl Ester, Ethanol, Emissions, Performance, Trade-off study

Harmonics Analysis of Solar-Wind Hybrid System

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ABSTRACT:

Hybrid energy system is the energy system which combines two or more number of renewable source of energy that generates electrical power and provides several advantages over a particular single system. This may be like wind electric and solar electric (photovoltaic or PV) hybrid system. The growing demand of electricity has need to produce power through renewable source of energy such as solar energy, wind energy etc. and also from making the hybridization of the renewable energy systems. Hybrid system is taken to get the advantage over the shortcoming of either sources of energy. The decentralized Renewable Hybrid energy technology, found useful in urban and semi urban areas, we are putting solar electric (photovoltaic or PV) system and wind electric system in different places to satisfy the load requirements. The solar electric (photovoltaic or PV) system generates the power at the solar hour at presence of solar lights only. As solar irradiance is fluctuating and depends on weather conditions, the current and voltage distortions are caused by the nonlinear converters which leads the power quality issues. The solar electric (photovoltaic or PV) system it is in DC in nature. Where inverter is required to convert power from DC to AC and by using of power conversion unit the harmonics are induced. The wind electric (Wind Energy Conversion System) converts wind energy to electrical, depends on wind speed. But the wind speed fluctuating every time, the current and voltage distortions are caused, harmonics are induced. Harmonics creates the Power quality issue which degrades the reliability and quality of power system. The Total Harmonic Distortion (THD) is done in simulating environment of matlab and a suitable filter should be designed to mitigate effects of harmonics.

KEYWORDS: THD, photovoltaic, wind, inverter

Fault Diagnosis in Power System using Artificial Neural Network

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ABSTRACT:

The fault diagnosis of a power system provides an effective means for getting information about system restoration and maintenance of the power system. Artificial intelligence has been successfully implemented in fault diagnosis and system monitoring. Expert systems are used by defining rules, applied for a fault diagnosis. Many other method were applied in analyzing the faults in power system, however fault location is complex case of underground cables.In the present work particularly a new method of "AI" namely "Artificial Neural Network" is used as diagnosing to classify the faults in the power system. A study has been made by taking 11 Bus systems. All different types of possible faults of the system were diagnosed and predicted with the help of Artificial Neural Network namely "Radial Basis Function Network" and the comprehensive study reveals that the proposed method is more accurate, efficient and expectable than any other method used for fault diagnosis of power systems.

KEYWORDS: fault diagnosis, AI, ANN, Power System

Impact of RFID Practices on Operational Performances - Inventory Management Prospective

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ABSTRACT :

In today's competitive business world technologies play vital role towards bringing operational efficiency in any business firms. Radio Frequencies Identification practices of inventory management playing major role in manufacturing as well retails industry for tracking of purchase of products, store operations, post purchase verification, supply chain management etc. Therefore, this paper focuses on the use of RFID practices towards increasing operational performance of retails stores. The study is based on the selected retails stores India. To establish the empirical relationship, data have been collected from key officials of the concerned retail outlet i.e Store manager, operations manager, purchase manager, warehouse manager. As per the need of the study various statistical tools were used such as correlation, regression and factor analysis. The outcome of the study concludes that RFID has significant impact on operational performance of retail store and also contribute to the existing body of knowledge as well as helping the management practitioners of retail Industry.

KEYWORDS: Inventory Management Practices, Retail Industry, Operational Performance.

Interface analysis of ZnO/GaSb for futuristic high speed devices

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ABSTRACT :

To enhance the next generation low power, high speed, energy efficient electronic applications, III-V compound semiconductor materials such as gallium antimonide (GaSb) is receiving special attention as the channel material due to its band structural and optical properties. GaSb can be employed in conjunction with other compound semiconductor materials for high speed electronic and long wavelength photonic devices. One such promising compound semiconductor material is zinc oxide (ZnO). ZnO is well known amongst the researchers due to its wide spread applicability in the field of optoelectronics, biosensors, biomedicine, material science, UV detectors, nanogenerators etc. due to its unique electrical, optical and mechanical properties. Therefore, with an intention to combine these two popular materials for the futuristic high speed devices, interface analysis of ZnO/GaSb has been carried out in this paper. So as to serve the purpose, MOSCAP structure has been used as a tool for study. Therefore, in this paper electrical characterization of ZnO/GaSb MOSCAP structure was analyzed taking GaSb as substrate, whereas ZnO as the dielectric material using SILVACO TCAD tool at 300K. Capacitance-voltage(C-V) was found out at a high frequency of 1 Mhz. The threshold voltage (Vth) and flatband voltage (Vfb) was simulated with respect to oxide thickness. Thereafter hole mobility for the structure was simulated and plotted against electric field and its effect is considered. Interface trap density (Dit) was found to be in the order of 1018 cm-2ev-1 by Terman method.

KEYWORDS: GaSb, ZnO,TCAD, Terman method, Interface trap density.

Partial Shading Effect on the performance of Electric Vehicle Integrated Solar PV System

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ABSTRACT :

Solar PV systems based electric vehicles are manufactured to reduce harmful emission from the environment that uses PV as the major source of energy. In general, the PV modules are installed at the roof of vehicles that converts the energy from the sun to charge the integrated battery while running and parking mode. Also, for smooth charging of the battery, maximum power point trackers (MPPTs) are installed that maintains the required voltage to charge the battery. However, partial shading causes a serious problem by affecting the performance of the system by forming multiple peaks in the characteristics curves resulting in low power output and false tracking by the MPPT algorithms. In this paper, the effect of partial shading on the power generation of the roof integrated electric vehicle has been studied. The entire study has been conducted in MATLAB/Simulink environment under various partial shading scenarios. It has been found that occurrence of shading results in severe power loss and voltage reduction hence, affecting the charging of the connected battery. Keywords: Photovoltaic, Maximum power point tracking, Battery, Partial shading, Electric vehicle.

Sensitive Load Management in Captive Power Plant- Aluminum smelter

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ABSTRACT :

Production of Aluminium involves two major stages; refining of Bauxite to alumina and smelting of alumina to Aluminium. Smelting is a highly energy intensive process which accounts to about 15 kW-hour energy per kg of Aluminum production. Also, Aluminium smelting is very energy sensitive and any disruption in power supply to the electrolytic cells (even for three to four hours) results to stoppage of pot line operation as molten metal freeze inside the cells. Restoration of the frozen pot is not only very expensive but also time consuming. At the same time, the lifespan of the pot is also reduced considerably. Hence the most important life support system for an Aluminium smelter is the continuous supply of reliable power to its' Pot line.

Therefore, a reliable power supply system is highly essential to ensure the continuous power supply from both the internal or external sources. So making a balance system among necessary power requirement in smelter and power generation in captive power plant and available capacity in power grid (as external sources) is a challengeable task. Hence always a robust power network is made available, which operate in a very reliable manner to manage continuous power supply to a mega Aluminium smelter.

KEYWORDS: Captive power plant, Aluminum,Smelter, Single line diagram, Blackout, Black start DG, Condition monitoring.

A Collaborative Learning Framework for Entire News Authentication

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ABSTRACT---

The extensive usage of the internet in the current digital era has changed how people obtain news, with social media and smart phone apps replacing conventional media outlets. But this change has also resulted in a worrying problem: bogus news is spreading quickly. Fake news is a serious danger since it can have a big negative impact on society and the country. It is widely available on social media and other internet platforms. It can be employed as a propaganda technique against people, groups, societies, or political parties. Furthermore, spammers use strategies like click-baits to take advantage of attention-grabbing news items in order to make money from advertisements. This work employs machine learning, natural language processing, and artificial intelligence methods to binary classify internet news articles in order to tackle this issue. We try to find the best classical machine learning models by examining the literature on false news identification. Our objective is to create a product model that can precisely classify news stories as true or fake by utilising supervised machine learning methods. For text analysis, we use technologies like NLP and Python's scikit-learn. The aim is to enable users to differentiate between authentic and fraudulent news while simultaneously authenticating the websites that disseminate the information.

Keywords-Machine Learning, Click Baits, NLP, Online News

AI-Powered Resume Examiner

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ABSTRACT---

An artificial intelligence-based programme called AI Resume Analyzer evaluates resumes from applicants and offers suggestions for how to make them better. The résumé of the candidate is entered into the system, which then uses machine learning algorithms to find areas that could use improvement. The system's primary objective is to assist job searchers in crafting resumes that will effectively navigate the interview selection process. The system employs a number of techniques, including sentiment analysis, text mining, and natural language processing, to extract pertinent information from a CV of an applicant. Examine the applicant's background, qualifications, training, and accomplishments to gain insight into how to make their resume better. In order to assess whether your resume satisfies industry standards, the algorithm also assesses the format, language, and spelling. The clever resume parser is available to recruiters and job seekers. Job searchers can use the system to build resumes that are more likely to pass the selection process during interviews, and recruiters can use it to swiftly identify the top candidates for a particular post. With a clever resume analyzer, job searchers can raise their chances of being hired for a desired position.

Keywords—Analytics, AI, ML, CV, Parsing, NL

Asymmetrically-driven current-based Chireix Class-F Power Amplifier Embedding Device Model

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ABSTRACT---

In order to construct an asymmetrically driven class-F Chireix power amplifier, model-based nonlinear embedding is used for the first time (PA). The ideal load impedances for the fundamental and multi-harmonics required at the pack- age reference planes are found using the embedding model of a 15 W GaN HEMT such that the two intrinsic transistors can operate with a previously reported ideal current-based Chireix combiner. The phase offset of the Chireix combiner is preserved throughout the design from the intrinsic and packaged nodes up to the drive generators by using a symmetric circuit topology. This embedded Chireix PA is discovered to require asymmetrical amplitude and phase modulated input, in contrast to the traditional Chireix PA, which is powered with constant envelope signals.

Index Terms—Chireix, outphasing, power amplifiers

Auditing Cloud Storage with Deduplication and Robust Privacy Protection

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ABSTRACT---

While the cloud must only retain one copy of a duplicate file, cloud storage auditing with deduplication can confirm the accuracy of information stored in the cloud. To the best of our knowledge, every existing deduplication based cloud storage auditing technique is vulnerable to brute-force dictionary assaults, resulting in the compromise of user privacy. In this research, we address a novel defense strategy against dictionary attacks using brute force against cloud storage audits. Our proposal is a cloud storage auditing method that incorporates deduplication to provide robust privacy protection. This means that when a user's file is predictable or comes from a limited space, the privacy of their file is protected from the cloud and other parties. Within the suggested

Keywords—Cloud, deduplication, auditing, storage

Automation and Design Optimization for Safe Cryptographic Circuits

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ABSTRACT--

For secure cryptographic IC design, a number of logic design philosophies have been put out to thwart DPA (Differential Power Analysis) assaults. Only a few publications, meanwhile, dealt with the autonomous synthesis and optimization of these safe logic circuits. The goal of this research is to pinpoint frequent optimization problems in conventional masking- based countermeasures. These consist of the following: (1) minimum decomposition of multi-input AND gates; (2) limited Reed-Muller (RM) logic minimization; and (3) least quantity of mask bits utilized to randomize power usage. To minimize the RM logic, a heuristic approach based on OFDD is suggested, emphasizing literal numbers. The final two optimization issues are expressed as graph coloring problems and zero-one integer linear programming, respectively. An automated design procedure for safe cryptographic integrated circuit design was created in C language based on these formulations and optimizations.

Behavior Destabilization Using Machine Learning

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ABSTRACT--

The existence of social networking sites on the internet has improved everyone's quality of life. When it comes to the most popular social networking sites, Facebook is ranked highly. Facebook users can use text and emoticons to express their ideas, feelings, and opinions. There are many viewpoints, posts, and remarks that might offend someone with sensitive sensibilities. It's critical to monitor such content in online groups and communities, but doing so can be difficult because everyone is free to express their own thoughts and opinions. The recent discourse on depression on the internet is a serious cause for alarm. The suggested method looks for signs of sadness in people by identifying underlying information about mood posted on Facebook. Using sentiment analysis, one may determine a user's positive (like happy, astonished, and delighted) and negative.

Keywords—Facebook, depression, anxiety, tension, sadness, and anger

IoT-Based Prototype for Automated Management of Bio- Crude Extraction from Waste Tires

Ajaya Kumar Swain, Stita Prangna Mishra Gandhi Institute for Education and Technology, Baniatangi

ABSTRACT--

The automatic control prototype for bio-crude extraction from discarded tires. An electric heater is used as the heating source in this system to enable automatic control of the heating system. The parameters such flow level, temperature T1 and T2, and heater temperature T3 are maintained via a solenoid valve. The ATmega328P microcontroller is used in IoT. Through the Internet of Things, the system assists the industry by providing full automatic controls and monitoring for the entire plant. The industry was developed on a PC or mobile phone even far from the industry. Both automatic and manual methods of process monitoring and control are available to the user (e.g., one click can initiate a complete process shutdown in an emergency).

Machine Learning for the Prediction of Cardiac Arrhythmias

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ABSTRACT---

An irregular heartbeat, which might be too fast, too slow, or unstable, is known as a cardiac arrhythmia. A test called electrocardiography (ECG) can be used to detect cardiac arrhythmia. It records a patient's heart's neurological signals over an extended length of time using electrodes positioned against the chest. ECG signals are a useful tool for diagnosing cardiac arrhythmias since they show the heart's physiological condition. The capacity to identify dangerous forms of cardiac arrhythmias from ECG data makes a medical skill specialist indispensable. On the other hand, manually interpreting ECG waveforms by a doctor takes a lot of time and effort. Therefore, it is crucial to create automatic methods for identifying abnormal conditions from frequently acquired ECG data. Moreover, expedite first aid protocols if cardiac issues can be identified automatically through health monitoring

Keywords:- Electrocardiograph , Cardiovascular Disease (CVD), Random Forest (RF) , Machine Learning algorithm.

Charging Mobile Through Digital Transaction

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ABSTRACT--

In this age of rapid technological development, mobile phones have been ingrained in peoples' daily lives. There is always a need for cell phone charging in places where standard charging is not available. Digital transaction machines that support mobile charging are intended to address this issue. Our aim is to design and construct a charging gadget that necessitates the user to place their phone into a slot and confirm its availability before to usage. Charges are completed following the payment process. Installing this device outside of any commercial building is quick and easy. For instance, bus stops, shopping centers, hospitals, train stations, and airports.

Keywords--Charging Machine, LED display, Arduino UNO

Concurrent Association of Rectennas for Harvesting Electromagnetic

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ABSTRACT--

Because they have a low input power, antennas used as microwave electromagnetic energy harvesting systems provide very little output power to the load. This paper presents a method that uses a parallel association of rectennas to boost the output power. Software for Computer Simulation Technology was used to simulate the antennas. The program Advanced develop System was used to develop circuits for rectifiers. The goal of the project was to match antenna impedance at the operational frequency with rectifier circuits. When using a 1000 Ω load, the measured findings from a single rectenna and related rectennas are compared and analyzed.

Keywords—Parallel association, rectenna, schottky diode, recycling microwave energy

Constructing an Implantable SiC Rectenna for Wireless In-Vivo Medical Equipment

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ABSTRACT--

Many studies have been conducted on radio frequency energy harvesting techniques for wireless applications; however, only a small number of these techniques have been able to produce energy levels high enough to be used as viable sources for implanted medical devices, specifically implanted rectennas. Throughout the implanted device's lifetime, these rectennas can supply an endless supply of energy. This research proposes a rectifier system with matching network of 47.7% power efficiency and a constructed rectenna utilizing Silicon Carbide (SiC), a biocompatible material. The purpose of the developed SiC rectenna is to transmit electricity wirelessly in the biomedical field. Implantable medical devices may see an increase in battery life thanks to this planned SiC rectenna.

Index Terms—Silicon Carbide, implantable medical devices (IMD's), rectenna, rectifier, power transmission, biocompatible, RF Energy

Design of a dynamically reconfigurable RISC CPU utilising the MIPS Instruction Set

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ABSTRACT--:

The world of today encourages multipurpose in all things. This work develops a multifunctional RISC processor using the MIPS instruction set architecture. Dynamic reconfiguration refers to the processor's capacity to modify its internal Instruction Decode and Execute stage while the system is in operation in order to accommodate new functions. This project outlines a principle for exploiting the MIPS instruction set to increase performance in the context of microprocessor unit applications.

Keywords - RISC, MIPS, dynamically reconfigurable.

Creating a Library Management System on the Web

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ABSTRACT--

The primary goal of this research study is to create a computerized system that can facilitate the activities of the Asmara Community College of Education (ACCE) by giving librarians and library users convenient access to library usage. While this system offers electronic versions of books, periodicals, newspapers, and other helpful materials that users may access without limitation and that assist librarians in managing library resources creating an automated library management system (LMS) that would assist in resolving issues with manual libraries. The majority of hard copy documents become damaged after a short period of use, and the physical library has numerous restrictions to meet the needs of its patrons. To get rid of the paperwork at the library, to lower the need that exists.

Keywords—Library Management System, ACCE, Database, Digital system

Covid-19 Detection and Analysis Using Chest X-Ray Images

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ABSTRACT--

Rapidly spreading Covid-19 is a viral disease that not only affects humans but also infects animals. This infectious disease has an impact on people's daily lives, health, and the nation's economy. One readily available technology that can be a great substitute for other methods in the diagnosis of COVID-19 is X-ray imaging. This analysis's accuracy, sensitivity, and specificity were 97%, 96.3%, and 97.6%, respectively. This would be very helpful in light of the epidemic and the conflict between the necessity and availability of preventive measures. This research proposes to use deep learning methods to automatically detect COVID-19 from digitized chest X-ray pictures.

There are no secrets to success.
It is the result of preparation,
hardwork, and learning from failure.

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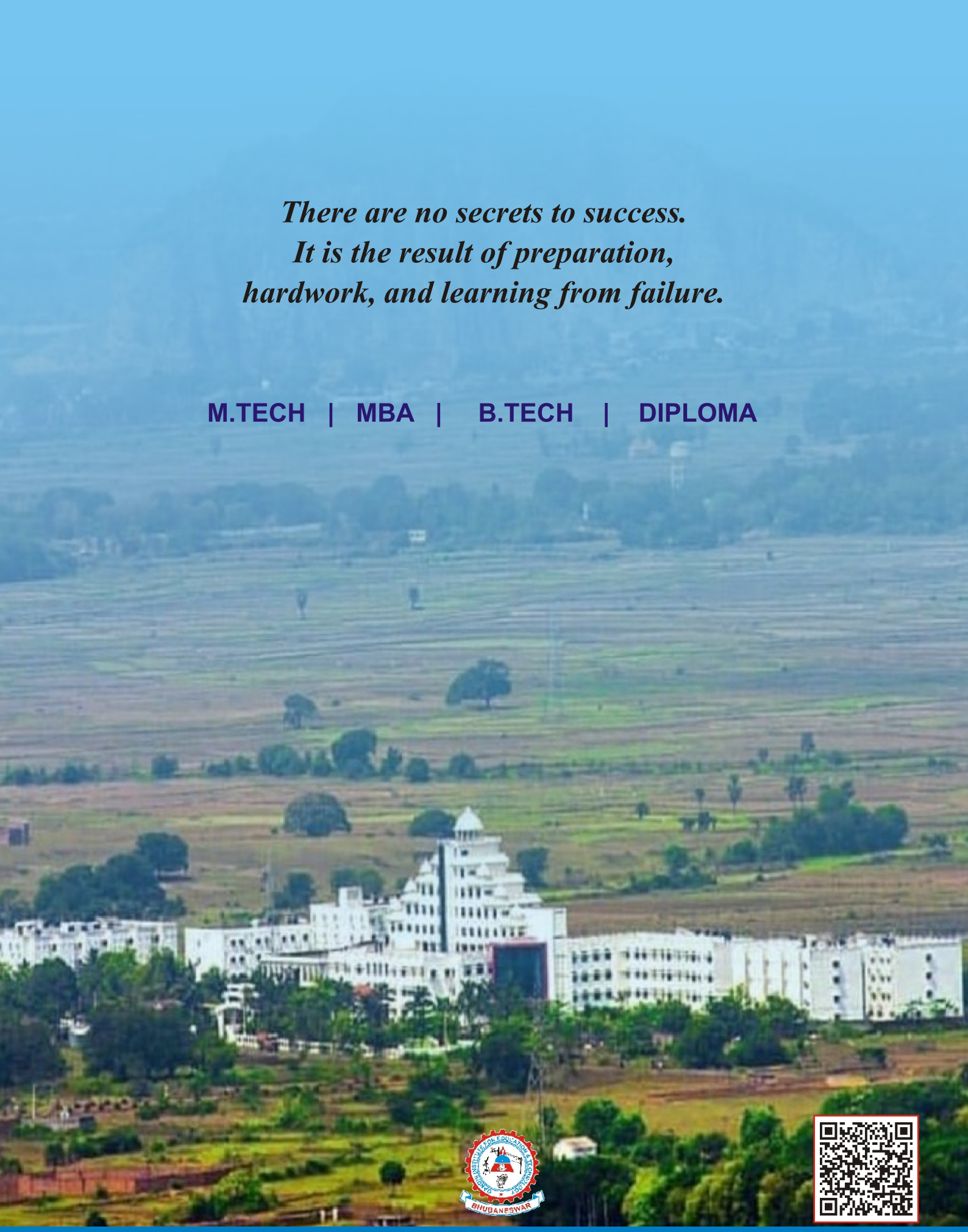

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