EECSE 19

5th August ~ 8TH Aug; 2019

NATIONAL CONFERENCE
ON

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE ENGINEERING

CONFERENCE PROCEEDING

NIT, Bhubaneswar

Nalanda Institute of Technology, Bhubaneswar

Organized by

Department of Electrical Engineering and Computer Science And Engineering

Nalanda Institute of Technology

Bhubaneswar - 752050

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ABOUT THE CONFERENCE

Science and technology has continuously evolved through decades. EECSE-2019 was organized in August-2019 and was successful in capturing the development of web technology and electrical advancement in cope with modern technology. Department of Electrical and Computer Science Engineering, NIT, Bhubaneswar is organizing EECSE-2019 to showcase recent advances software technologies and recent developments in electrical engineering. In keeping up with the research interest of software engineers and electrical engineers, EECSE-2019 will provide an update on scientific and technical aspects covering broad areas of interests in engineering and applications.

ABOUT THE DEPARTMENT

The Department of Electrical and Computer Science Engineering has been in existence since 2007 with the inception of the college with an initial intake capacity of 60 each and is producing high quality technical manpower needed by industry, R&D organizations, and academic institutions. The intake capacity was enhanced to 120 in the year 2011.The Department has full fledged faculty members who are specialized in the fields of Power Electronics, Power System and Computer Science Engineering. Laboratories are fully equipped to enhance the knowledge of the student, periodic industry trips and visits to various project sites are arranged. Special lectures and seminars are held on a frequent basis to assist them tailor in their particular areas of interest and trying hard to transform students of even mild talent to professionals in the Machine Learning, Data Science, IOT and MATLAB field. Already more than 1000 nos of alumni have been produced so far, placed in different Government, private, Public & other sectors and some of them have pursued higher studies. However, with the progress of time, many more frontier areas of electrical engineering have been taken up for active research.

ABOUT THE INSTITUTE

Established in the year 2007, Nalanda Institute of Technology (NIT) is one of the premier engineering colleges in the self-financing category of Engineering education in eastern India. It is situated at temple city Bhubaneswar, Odisha and is a constituent member of Nalanda Educational Trust. This reputed engineering college is accredited by NAAC, UGC and is affiliated to BPUT, Odisha. NIT aims to create disciplined and trained young citizens in the field of engineering and technology for holistic and national growth.

The college is committed towards enabling secure employment for its students at the end of their four year engineering degree course. The academic fraternity of NIT is a unique blend of faculty with industry and academic experience. This group of facilitators works with a purpose of importing quality education in the field of technical education to the aspiring students. Affordable fee structure along with approachable location in the smart city of Bhubaneswar makes it a preferred destination for aspiring students and parents.

The Institute works with a mission to expand human knowledge beneficial to society through inclusive education, integrated with application and research. It strives to investigate on the challenging basic problems faced by Science and Technology in an Inter disciplinary atmosphere and urges to educate its students to reach their destination, making them come up qualitatively and creatively and to contribute fruitfully. This is not only its objective but also the ultimate path to move on with truth and brilliance towards success.

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VICE CHAIRMAN MESSAGE

On behalf of the Organizing Committee, it is my great pleasure to welcome you to National Conference on on "Electrical Engineering and Computer Science Engineering-2019" (EECSE-2019). In our endeavour to raise the standards of discourse, we continue to remain aware in order to meet with the changing needs of our stakeholders. The idea to host the EECSE - 2019 is to bring together Researchers, Scientists, Engineers, Scholars and Students in the areas of Electrical and Computer Science Engineering. The EECSE - 2019 Conference will foster discussions and hopes to inspire participants from a wide array of themes to initiate Research and Development and collaborations within and across disciplines for the advancement of Technology. The conference aims to bring together innovative academic experts, researchers and Faculty in Engineering and Management to provide a platform to acquaint and share new ideas. The various thematic sessions will showcase important technological advances and highlight their significance and challenges in a world of fast changes. I welcome all of you to attend the plenary sessions and invite you to interact with the conference participants. The Conference Committees will make any possible effort to make sure that your participation will be technically rewarding and a pleasurable experience.

I am looking forward to meeting you in during EECSE - 2019 and to sharing a most pleasant, interesting and fruitful conference.

With regards,
Prof. Malaya Kumar Padhi
Vice. Chairman
Nalanda Institute of Technology, Chandaka
Bhubaneswar, Odisha

PRINCIPAL'S MESSAGE

It gives me great pleasure to welcome you to the National Conference on "Electrical Engineering and Computer Science Engineering-2019" (EECSE - 2019), which will take place from August 5-8, 2019.

This conference's goal is to spread knowledge among other educated people in addition to discussing current, hot topics in a certain field. Dramatic advancements have been made in engineering and technology over the years. I am hoping that EECSE - 2019 will turn out to be the most beneficial national conference devoted to showcasing the newest developments in engineering and technology.

We have asked eminent specialists to participate in the Technical Programs in order to give an exceptional technical level for the conference presentations. Technical seminars and keynote plenary sessions will be held.

I hope EECSE - 2019 will make you aware of state-of-the art systems and provide a platform to discuss various emerging technologies in Electrical and Computer Science Engineering.

With regards,
Prof. (Dr.) N.H.S. Ray
Principal
Nalanda Institute of Technology, Chandaka
Bhubaneswar, Odisha

CONVENER'S MESSAGE

National Conference on "Electrical Engineering and Computer Science Engineering-2019" (EECSE-2019) is a prestigious event jointly organized by Electrical Engineering and Computer Science Engineering Department with a motivation to share a progress in recent technologies. The objective of EECSE-2019 is to present the latest research and results of scientists (preferred under graduate and post graduate students, research scholars, post-doc scientists, academicians and working professionals) related to the subjects Electrical Engineering and Computer Science Engineering. The conference will provide with paper presentations and research paper presentation by prominent speakers who will focus on related state-of-the-art technologies in the areas of the conference.

I wish all the success to the conference EECSE-2019.

With regards,
Prof. NAROTTAM SAHU

Professor and HOD of Comuter science engg.
Nalanda Institute of Technology,
Chandaka,Bhubaneswar, India

Contents

Miniature Unmanned Aerial Systems: Exploratory Findings for a Mission Specialist Interface

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Abstract—

This study examines how a dedicated Mission Specialist interface for small unmanned aerial vehicles interacts with humans (UAS). According to recent HRI results from the literature on micro UAS, a Mission Specialist role necessitates a compact, portable, and visually appealing software-based interface. An identified HRI investigation framework, five synthesised design principles, and a system architecture for a dedicated Mission Specialist interface were produced as a result of a literature review on human-robot team modelling, human-machine interaction technologies, and interaction principles applicable to micro UAS. Using 16 specialised emergency responders, an exploratory field study was conducted to install and evaluate the interface. A specialised Mission Specialist interface may prove useful as a tool for future HRI investigations, according to study findings.

Keywords— User Interface Designs and Usability Evaluations; Human Factors and Evaluation Methodologies; HRI Applications (Search and Rescue).

OpenSec: A Framework for Using OpenFlow to Establish Security Policies

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Abstract—

Policy-driven network management has drawn increased attention as software defined networks (SDN) and OpenFlow gain popularity. A software-based, network-aware controller is used to automatically configure all network devices, replacing the need for manual configuration of several devices. The topology is abstracted by software programmes running on top of the network controller, which makes it easier to operate the network. We suggest OpenSec, a security framework built on OpenFlow that enables a network security administrator to design and apply security policies that are expressed in human-readable language. With the aid of OpenSec, a user can specify a flow in terms of OpenFlow matching fields, specify which security services (such as deep packet inspection, intrusion detection, spam detection, etc.) must be applied to that flow, and specify security levels that specify how OpenSec will respond in the event that malicious traffic is discovered. We use OpenSec in the GENI testbed to assess the framework's adaptability, precision, and scalability. To protect a web server from network scanners, the experimental system uses deep packet inspection, intrusion detection, and network quarantining. We obtain a 98% detection rate and a consistent delay when responding to security alarm

ML ALGORITHM'S PART IN SDN IN 5G NETWORK

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ABSTRACT

The ML algorithm, an adaptive bandwidth mechanism, and a dynamic threshold technique are suggested as components of a security strategy in this study. As a result, the DDoS attack mitigation method that the SDN controller's ML-trained model takes into account is given the most attention. The suggested method employs the best ML to find security solutions that raise the network's effectiveness while also enhancing the safety of the SDN controller. In this method, the Extreme Gradient Boosting (XGBoost) and other ML techniques were used to increase the efficiency of the entire network as well as the accuracy of the security solutions. The increasing complexity of forwarding, control, and management components of services has prompted a significant change in the abstraction, separation, and mapping of these components. consumption of multimedia services and the need for high-quality services from clients. We evaluate our suggested architecture's latency, reliability, and user-satisfaction using the EstiNet simulator. The performance of the proposed design is evaluated through simulation and contrasted with that of alternative architectures, such as the Advanced Static Analysis and Transformation Protocol and the software-defined unified virtual monitoring function. Our proposed architecture performs better than the alternatives in terms of overall time delay (1800 s for 200 IoT devices), reliability 90%, and satisfaction 90%, according to analysis.

Keywords: - Machine learning; Distributed Denial-of-Service; SDN based 5G networks; Security solution; Extreme Gradient Boosting Algorithm (XGBoost)

AN EDUCATIONAL APPROACH TO A DETAILED APPLICATION OF THE TL494 PSPICE MODEL IN THE DESIGN OF SWITCHING REGULATORS

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Abstract:

This study explains how to analyze switching regulators using the TL494 PSPICE MODEL with OrCAD Capture, which can help newcomers like undergraduate students understand switching regulators. Although none of the literature gives the necessary knowledge to work with the TL494 simulation model, this research primarily focuses on the application of simulation models. Although though the TL494 chip is a pretty straightforward piece of hardware, working with the Pspice model of the TL494 without sufficient Pspice software understanding might be challenging. With the aid of a buck converter, the use of the simulation model for this chip with OrCAD Capture is illustrated. This application report can be expanded to include more converters that are both isolated and not isolated.

Keywords: TL494 Pspice Model, OrCAD Capture, convergence, RELTOL, V_PWM, INPUT_VTH, V_DT

An Effective BCD to Excess-3 Code Converter Design Method Based on QCA

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Abstract—
    Quantum dot Cellular Automata (QCA) [1] [2] [7] circuits are used to create a new hierarchical architecture. The world is moving more and more towards a digital lifestyle, while electronic devices are getting much smaller. Nowadays, one of the high performance complementary metal-oxide semiconductor (CMOS) technologies, known as nanotechnology, is used to create digital circuits. When compared to transistor-based technologies, quantum dot is a Nano-scale device with extremely low power consumption. It is a very potent tool that enhances design intelligence to a higher degree, such as in quantum dot cellular automata (QCA). A new architecture known as the quantum dot cellular automata transfers information only through the interaction of the cells. It is one of the upcoming technologies. The basic cells, wires, and their many sorts, majority gates, clocking levels, and basic logic gates and their significance are also included in this paper's representation of the core QCA principles. The primary goal of this project is to present an effective design strategy for a BCD to Excess-3 code converter that contains nine (three input) majority gates, two inverter gates, and a total of 164 cells. This project makes greater use of the QCA designer tool to achieve better simulation results.

Keywords— Quantum dot, Quantum-dot Cellular Automata, Complementary metal-oxide semiconductor, Binary coded decimal, Nano-scale, QCA designer tool.

Identifying Multiple Scan-Chain Faults When System Logic Defects Are Present

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Abstract —

Because system problems in the logic outside of the scan chain may have an impact on the results of a test, we describe a combined hardware-software based solution to scan-chain diagnosis. We use the double-tree scan (DTS) chain architecture for the hardware component since it has been previously demonstrated to be successful in lowering the power, volume, and application time of tests for stuck-at and delay problems. We create a flush test variant that can narrow down a large number of potential candidates for a multiple fault in a DTS chain. The software component that includes fault simulation and analysis of the circuit's reaction to test patterns generated by ATPG enables further resolution to a single multiple fault. Experimental findings on benchmark circuits demonstrate that even when a significant number of random system defects are introduced into the circuit, near-perfect scan-chain diagnosis for multiple faults is still feasible. Experimental results on benchmark circuits show that near-perfect scan-chain diagnosis for multiple faults is possible even when a large number of random system faults are injected in the circuit.

Keywords: Double tree scan, Scan chain diagnosis, system logic defects.

Conference on Signal Processing and Analysis Tools for Seismologists and Engineers

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Abstract

It is the primary signal processing and analysis tool for much of the international seismological research and engineering communities, including academic, government and commercial institutions. SAC has extensive, well-documented, tested, and well-maintained data processing and analysis capabilities, a macro programming language that allows users to develop new analysis techniques and custom processing programs, and the ability to perform both batch and interactive processing. SAC's strengths include its ability to handle different types of data. Its widespread use (more than 00 institutions worldwide) has greatly facilitated the development of collaborative projects between researchers. SAC is relatively easy to use and is available for many hardware platforms. Part of its popularity stems from its user-driven development philosophy, which results in consistent, backwards-compatible development driven by user input and needs.

We present a brief overview of the fundamental features of SAC2000 and discuss some recent enhancements that make it a much more powerful tool for seismic analysis. Thesenew features range from I/O enhancements to significant new processing capabilities andinclude a number of features that significantly increase user efficiency and productivity. Documentation is also strength of SAC with detailed manuals available through SAC'shelp facility and the World Wide Web Future plans for SAC involve selected upgrades and re-engineering with object oriented development techniques to provide more flexible and efficient tools for the analysis of large databasesor distributed data sets.

INTEGRATION OF CLOUD COMPUTING WITH INTERNET OF THINGS

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Abstract:

Cloud computing and Internet of Things (IoT) are two different techniques. It is becoming very difficult to compute power constrained small sensors and other devices which generate the data. Data generated needs to be managed according to its requirements, to create more valuable services. For this purpose, cloud computing must be integrated with Internet of Things is very important. This paper represents use of cloud computing to enable the IoT.

Keywords: Internet of Things; Cloud Computing; Cloud; Generation of computing services data; sensors.

How to Employ a User Research to Assess a Conflict-Minimizing Task Scheduler

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Abstract—

Workspace awareness technologies help developers in a team coordinate by alerting them to developing conflicts brought on by simultaneous development. Recently, a number of these tools have been released. It is difficult to evaluate such (collaborative) tools through user studies because it depends on the dynamics of the group and how they grow. In this article, we outline the difficulties in assessing a collaboration tool designed to reduce conflicts by planning (separate) development tasks. We list the research questions that a user evaluation needs to address along with the difficulties that will be encountered in doing so. We intend to use the workshop to discuss difficulties and approaches for evaluating collaborative development tools as well as to solicit input and feedback to improve the design of our user research.

Applications of soft computing in food science

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Abstract

This paper describes the potentials of the application of modern soft computing techniques into development stage of contemporary food products. Recently, soft computing has been extensively studied and applied for scientific research and engineering purposes. In biological and food engineering, researchers have developed methods of fuzzy logic, artificial neural networks, genetic algorithms, decision trees, and support vector machines to study complex characteristics of many products in order to be adopted cost effective measures satisfying the production constraints and consumer expectations.

Key words: Soft computing, neural networks, fuzzy systems, food, food mycology, food composition.

End-to-End Heterogeneous Flow Scheduling Design and Analysis in an Avionics Network

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Abstract—

A deterministic network with guaranteed service is provided by avionics Full DupleX (AFDX) Switched Ethernet technology to facilitate real-time data transmission in practical avionics applications. A worst-case upper bound on end-to-end transmission delays of virtual links (VLs), which are frequently considered to be homogeneous and have comparable transmission requirements, is provided by determinism. The examination of end-to-end delays of heterogeneous flows still needs to be done, though. In an AFDX network that employs Deficit Round Robin (DRR) scheduling policy on switch output ports, this study provides end-to-end delay limitations of transmitting heterogeneous flows, including avionics, multimedia (video & audio), and best-effort data flows. In order to effectively handle heterogeneous flows in a unified manner, we transform scaled multi-type flows to a single representation of usage, i.e., DRR quanta wayand comprehensively study their end-to-end delays. We contrast the DRR-based scheduling strategy's fairness and transmission delays with those of the current avionics standards, FIFO and a static priority scheme. Comprehensive tests using random and periodic flows in an AFDX prototype demonstrate the effectiveness and efficiency of our suggested methods. To the best of our knowledge, this is the first study that examines end-to-end delays for heterogeneous flows in an AFDX network based on the DRR policy.

Closed Loop Speed Control of Induction Generator
with Scalar-Control Inverters

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Abstract

A closed loop speed control for an induction generator is presented. The system was created to control speed and generator voltages using a scalar control technique for a space vector modulation-voltage source inverter and a three-phase squirrel-cage induction generator. The purpose of this study was to generate a constant speed voltage at a variable mechanical torque. According to the simulation results, the proposed speed controller can make the system work well.

Keywords: Induction generator; speed control; scalar control; voltage source inverter.

Conference on Convolutional Networks for Signal ProcessingApplications

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Abstract—
          1D Convolutional Neural Networks (CNN) have recently become a state-of-the-art technology for important signal processing applications such as patient-specific ECG classification, structural health monitoring, power electronic circuit anomaly detection, and motor fault detection. This is an expected result, since using an adaptive and compact 1D CNN has many advantages over conventional (2D) deep analogs. First, compact 1D CNNs can be efficiently trained on a limited 1D signal dataset, while 2D deep CNNs typically require large datasets, e.g., on a "Big Data" scale, in addition to 1D-2D data conversion. to avoid the well-known "over fitting" problem. 1D CNNs can be applied directly to a raw signal (eg, current, voltage, vibration, etc.) without the need for pre- or post-processing such as feature extraction, selection, dimensionality reduction, demising, etc. and compact configuration, performing only linear 1D convolutions (scalar multiplications and additions), real-time and low-cost hardware implementation is possible. This article reviews the main signal processing applications of small 1D CNNs with some theoretical background. We will present their best performances and finally focus on some of the most important features.

Keywords – 1-D CNNs, Biomedical Signal Processing, SHM

HOG: Map from Distributed Hadoop Minimize Grid Usage

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Abstract—

Powerful data processing platforms like MapReduce are ideal for both professional and academic purposes. In this study, we create a brand-new Hadoop MapReduce architecture that runs on the Open Science Grid, which connects several institutions in the United States (HOG). It differs from earlier MapReduce systems, which functioned in specialised settings like clusters or clouds. Using the grid's flexible resources, HOG offers a free, elastic, and dynamic MapReduce environment. By converting data centres all over the United States into virtual racks and building multi-institution failure domains, HOG increases Hadoop's fault tolerance for wide-area data processing. Existing Hadoop MapReduce applications are unaffected by our changes to the framework. We successfully extended HOG to 1100 nodes on the assessment .In the evaluation, we successfully extend HOG to 1100 nodes on the grid. Additionally, we evaluate HOG with a simulated Facebook Hadoop MapReduce workload. We conclude that HOG's rapid scalability can provide comparable performance to a dedicated Hadoop cluster.

Keywords - MapReduce, Grid computing, Middleware

Opportunities and Challenges of Integrating Renewable Energy in Smart Grid System

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Abstract

Smart grid technology is the key to efficient use of distributed energy. Considering that climate change is becoming a major problem facing the whole world today, the ever-increasing price of petroleum products, and the deregulation of renewable energy systems, the potential of renewable energy systems in electricity production seems to be increasing. However, to achieve commercialization and widespread use, an effective energy management strategy for the system must be considered. The concept of a smart grid has recently been successfully applied to power systems. This paper presents research on the integration of renewable energy into the smart grid. The introductory sections introduce the role of renewable energy and decentralized generation in a smart grid system. The following sections discuss the smart grid concept and the benefits and obstacles of a smart renewable energy system. Prices are an important variable in the success of renewable energy promotion. Therefore, it is important to gain an understanding of renewable energy pricing, taking into account the unique characteristics associated with renewable energy options. A review of work on renewable smart grid systems in recent years shows promising opportunities for such research opportunities in the future. This would be useful for developers and practitioners of renewable energy systems as well as policy makers.

Keywords: Distributed generation; Renewable energy; Smart grid; Sustainable development .

MULTI-AGENT SIMULATION OF THE UNIFIED LEARNING MODEL FOR UNDERSTANDING HUMAN LEARNING

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Abstract

Cognitive science is the discipline. Computer modelling based on cognitive architectures has been a key technique for addressing difficulties linked to human cognition and learning. The multi-agent computational model presented in this work is built on the principles of the unified learning model (ULM). The ULM is a fusion of neuroscience, cognitive science, psychology, and education that blends a statistical learning mechanism with a general learning architecture. The ULM's guiding principles are transformed into an integrated computational model by the single agent model and the multi-agent environment, which are discussed. Findings from simulations that were used to support assertions about human learning are provided. It is questioned whether simulation experiments on cognitive learning are appropriate.. Multi-agent system performance results are shown. The major elements of the ULM theory—long-term memory, motivation, and working memory—as well as their relationships may all be computationally simulated. The research on intelligent agents and human learning is shown to have implications.

FOR IoT DEVICES, COMPLETE DUPLEX WIRELESS COMMUNICATION AND NETWORKING VIA LORRA

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Abstract:

The internet of things (IoT) intends to make it possible for standard sensing apparatuses to exchange data with other apparatuses and work together to deliver intelligent service. IoT can be utilised, for instance, to monitor the city's air quality, manage air pollution, and give residents with information and alerts in real-time. Another illustration is data flow between IoT devices. The provision of long-range and outdoor wireless communication, such as LoRa/LoRaWAN, has been advocated as an alternative to the short-range wireless communication technologies now in use for indoor IoT sensors. There are numerous ways to send data from the widely dispersed sensors that make up the internet of things (IoT), such as using cables or 3G/4G networks. However, these techniques have prohibitively high costs, rendering them unsuitable for use in practical applications. Several new wireless technologies have recently been developed to offer long-range connectivity for Internet of Things sensors. LoRa has had its long-range performance tested among these. Although LoRa performs well for long-range transmission in rural areas, its radio signals can weaken over distance and be interfered with by structures like buildings and trees in addition to other radio signal sources. We build a full duplex LoRa/LoRaWAN network in this project. There are only two nodes in this network, and they both function as transceivers. Every node uses the LoRa protocol. The wireless protocol is this.

Conversational Product Search Using Poor Reviews

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ABSTRACT

When someone has to make a purchase, intelligent assistants allow them to do product searches using conversation, changing the way people engage with computers. To better understand the consumers' needs, the system may query them about specific features of the perfect items during the interactions. For instance, earlier research suggested asking people for the precise details of their ideal objects [27, 37] before displaying the findings. Users, however, might not have clear concepts of what a perfect thing looks like, particularly if they haven't seen any items. So, it is more practical to facilitate conversational search by providing examples and soliciting input. Also, it is simpler to gather the users' thorough input on specific characteristics (aspect-value pairs) of the irrelevant items when they express dissatisfaction with the ones that have been provided. Further information is available to help understand users' intentions by breaking down the negative feedback from an item level to fine-grained feedback on aspect-value combinations. As a result, we suggest in this study a conversational paradigm for product search that is motivated by irrelevant things, on which fine-grained input is gathered and used to provide improved results in the following iteration. We then propose an aspect-value likelihood model to incorporate both positive and negative feedback on fine-grained aspect-value pairs of the non-relevant items. Experimental results show that our model is significantly better than state-of-the-art product search baselines without using feedback and those baselines using item-level negative feedback.

KEYWORDS

Negative Feedback; Product Search; Conversational Search; Dia- logue System; Personalized Agent.

Mobility of Impurity Ions' Impact on Polymer Materials' Electrical Properties

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Abstract

Free gaps with uneven sizes exist between crystallites in polymers that have undergone melt crystallisation. The non-crystalline polymer molecules that are not incorporated into the crystallites are the cause of these empty gaps. These open areas serve as a conduit for impurity ions to travel. The electrical characteristics of polymer materials are influenced by the ionic motion along such a channel with the inhomogeneity. The interaction between ionic motion and inhomogeneous structure on the electrical characteristics was examined in order to explore the impact of such ionic motions on energy loss. With the help of broadband dielectric spectroscopy, the permittivity and electric modulus of plasticized poly(vinyl chloride) with dioctyl phthalate (p-PVC) and isotactic poly(propylene) (iPP) were detected for this purpose. A simple DC conduction is observed for p-PVC. However, for the iPP, another ionic motion appears on lower frequency side in addition to the DC conduction at high temperature. This change of ionic motion is considered to be caused by a phase transition in crystalline phase accompanied by a structural change in the non-crystalline part.

Keywords: Ionic motion; isotactic poly(propylene); non-crystalline molecule; permittivity

Dr. SRIKANT KUMAR DASHFrom static to high-performance race-free dynamic ternary adders

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Abstract:

This study investigates if dynamic logic style is appropriate in ternary logic. It presents dynamic ternary half and full adders with good performance, which are crucial parts of computer math. It is thoroughly explored how a static ternary design can change into its dynamic form. Race or charge sharing issues are not present in the suggested dynamic technique. These dynamic logic problems are dealt with in this study. In addition, the number of successive pass-transistors is reduced by a design technique which short-ens the critical path of ternary circuits. The new adder cells are simulated by using Synopsys HSPICE and 32 nm carbon nanotube field-effect transistor technology. Simulation results demonstrate the superiority of dynamic ternary circuits. The proposed dynamic ternary half adder operates 21% faster, consumes 23% less power, and has even 14 fewer transistors than its static counterpart.

Direct Current Resistive Circuit Analysis Using Theoretical And Experimental Methods by Thevenin

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Abstract:

The Thevenin method, applied at various positive voltages, is used to compute and measure a direct current resistive circuit in the paper (5V, 10V, and 15 V). The direct current resistive circuit was built using a breadboard, jumper wire, and three resistors with various values (100, 200, and 10k). The voltage and resistance were measured, respectively, using the voltmeter and ammeter. The outcome shown that as positive voltage climbed from 4.54 V to 9.09 V and 4.48 V to 13.64 V, respectively, the predicted and measured Thevenin voltage at various positive voltages increased. Thevenin resistance measurements, nevertheless, agree with the estimated value. The outcome demonstrated that the observed voltage and resistance from Thevenin are accurate and agree with the theoretically estimated value.

Key Words: Thevenin method, resistive circuits, DC circuit, Thevenin resistance, Thevenin voltage

National conference on Control of DC motor using Invasive WeedOptimization (IWO) Algorithm

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ABSTRACT:

A crucial scenario for DC motor velocity control is the desire for a quicker settling time. In order to create the best tuning settings for a proportional-integral-derivative (PID) controller, a soft computing-based controller for a DC motor drive is designed in this study. The suggested method has many advantageous qualities, such as simple implementation, consistent convergence traits, and appropriate computational performance efficiency. In the MATLAB environment, the DC Motor Scheduling PID-IWO controller is modelled. In comparison to PSO-PID controller, the designed technique is faster at creating the speed loop response stability, reduces steady state error, improves rising time, and ensures that disturbances have no impact on the driving motor's performance when there is no overtaking.

KEYWORDS: Control of DC motor, PID controller, robust control, Particle Swarm Optimization, Invasive Weed Optimization.

Research and optimization design of
Voltage divider biasing circuit based on PSpice

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Abstract.
A new approach to circuit optimization is given that uses the parameters scanning feature of PSpice simulation technology. This approach involves performing basic transient scanning on the circuit to match the fundamental requirements of the amplifying circuit. The circuit's parameters are scanned and adjusted after the irrational technical parameters are found. The optimized analysis design module is used to optimize the circuit design after the faulty parameters have been corrected. The voltage-divided bias amplifier circuit's optimum design procedure and simulation outcomes are provided. The experimental results demonstrate that by adjusting the circuit's performance specifications, the best amplifying circuit design can not only achieve the performance parameters demanded by the constraints and target conditions but also cut down on the number of optimization iterations and simulation runs, improving the efficiency and precision of the optimization design. Additionally, it confirms through simulation the viability and efficacy of improving the circuit and architecture.

MASCA-PSO based LLRBFNN model and improved fast and robust FCM algorithm for detection and classification of brain tumor from MRimage

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Abstract

A novel modified adaptive sine cosine optimization algorithm (MASCA) integrated with particle swarm optimization (PSO) based local linear radial basis function neural network (LLRBFNN) model has been proposed for automatic brain tumor detection and classification. In the process of segmentation, the fuzzy C means algorithm based techniques drastically fails to remove noise from the magnetic resonance images. So, for reduction of noise and smoothening of brain tumor magnetic resonance image an improved fast and robust fuzzy c means algorithm segmentation algorithm has been proposed in this research work. The gray level co-occurrence matrix technique has been employed to extract features from brain tumor mag- netic resonance images and the extracted features are fed as input to the proposed modified ASCA–PSO based LLRBFNN model for classification of benign and malignant tumors. In this research work the LLRBFNN model's weights are optimized by using proposed MASCA–PSO algorithm which provides a unique solution to get rid of the hectic task of radiologist from manual detection. The classification accuracy results obtained from sine cosine optimization algorithm, PSO and adaptive sine cosine optimization algorithm integrated with particle swarm optimization based LLRBFNN models are compared with the proposed MASCA–PSO based LLRBFNN model. It is observed that the result obtained from the proposed model shows better classification accuracy results as compared to the other LLRBFNN based models.

Keywords: Fuzzy C means algorithm (FCM) · Fast and robust fuzzy C means algorithm (FRFCM) · Local linear radial basis function neural network (LLRBFNN) · Adaptive sine cosine optimization algorithm–particle swarm optimization (ASCA–PSO) · Sine cosine algorithm (SCA)

On Using UAVs to Estimate Crop Height

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Abstract—

The use of Unmanned Aerial Vehicles (UAVs) for remote sensing has the potential to revolutionise agriculture by improving the spatial and temporal resolution of data collecting. By operating near to the crops and allowing the acquisition of better spatio-temporal resolution data, micro-UAVs have the ability to further enhance and enrich the data already obtained. In this study, we introduce a UAV-mounted measurement system that computes crop heights, a crucial crop health indicator, using a laser scanner. To establish the distance to the ground and to the top of the crops, the system filters, converts, and analyses the congested range data in real-time. The use of Unmanned Aerial Vehicles (UAVs) for remote sensing has the potential to revolutionise agriculture by improving the spatial and temporal resolution of data collecting. By operating near to the crops and allowing the acquisition of better spatio-temporal resolution data, micro-UAVs have the ability to further enhance and enrich the data already obtained. In this study, we introduce a UAV-mounted measurement system that computes crop heights, a crucial crop health indicator, using a laser scanner. To establish the distance to the ground and to the top of the crops, the system filters, converts, and analyses the congested range data in real-time.

MULTITIER CLASSIFIERS FOR BIG DATA SECURITY

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Abstract :

Researchers have been paying a lot of attention to big data lately because of how prevalent it is in so many different fields. Support vector machine (SVM) and J48 classifiers with base classifiers for improving classification performance. SVM has a higher degree of accuracy and will produce convincing results that deviate from ideal. The planned LIME classifier is large since it is designed to handle large amounts of data. At each tier, ensemble classifiers are integrated during this process. The subsequent tier might gather the results of the preceding tier, combine them, and communicate their results to the subsequent tier. Work is divided into each of the multiple levels present in this multitier system in order to maximise speed and accuracy. On numerous levels, it combines the advantages of completely different ensemble classifiers. The security of vast amounts of data is another worry of this classifier. They are produced mechanically as a result of several ensemble Meta classifier rounds. Many ensemble meta classifiers work as integral parts of alternative ensemble meta classifiers at higher tiers by being divided into multiple tiers simultaneously and mixed into a single mechanically generated unvarying system.

Keywords - Big data , SVM and J48, LIME classifier.

Designing a relay feedback oscillator to simulate circular rhythms in bacteria

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ABSTRACT

The research offers a relay feedback oscillator for simulating cyanobacterial circadian cycles. The hysteresis-type relay, low pass filter F(j), and negative feedback are all included in the relay feedback oscillator. Its negative feedback functions as the circadian clock's autoregulatory mechanism, and the idea behind it is based on the well-known Goodwin biochemical oscillator [1].The relay is responsible for the mediation of both the activation and degradation of oscillator state variables (protein concentrations) and in this way the pacemaker is constituted. Later on, low pass filter poles are identified for the purpose of modeling auto-oscillations with the free running period of 24h and the method of the pole identification consists in an ultimate frequency test providing stability margin of a single-loop composed of the filter and the relay in the feedback. Next, a relay output / input ratio of amplitudes and hysteresis are found out by the graphical test of the single-loop on the stability margin which is carried out in Bode graph. Lastly, since the Miyoshi oscillator is well known among biological oscillators for species of cyanobacteria, the output correspondence of the relay feedback oscillator model with the Miyoshi oscillator [2] is supplied.

KEYWORDS: Circadian rhythms, oscillator, limit cycle, relay characteristics, cyanobacteria growth

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Miniature Unmanned Aerial Systems with Distributed Users: Safety Considerations

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Abstract—

This paper presents five ideas on how to prevent or mitigate three categories of safety hazards created by enabling numerous users to operate small unmanned aerial systems (sUAS). Many catastrophe specialists who may not be robot experts or co-located with the pilot can benefit from data from small unmanned aerial systems (sUAS). At Texas A&M Engineering Extension Service's Disaster Response Center, two different types of interfaces have been designed and tested with responders undertaking exercises to improve team collaboration. Peschel notes that based on human- computer interaction principles, each user, which willbe referred to as a Mission Specialist to distinguish the user from the Pilot as a user, will need a display tailoredto for their needs. with expert responders from the Texas Engineering Extension Service, our center hasdesigned a series of user interfaces Working over a four year period, and refined them by flying in over a dozen exercises at the Texas A&M Engineering Extension

demonstrate three different types of safety concerns: unsafe control procedures, a loss of situation awareness, and elevated stress. The following five suggestions are made to lessen or remove the safety worries: Use artificial intelligence to resolve conflicts between competing directives from multiple experts; let the pilot, or a software agent, turn off the expert's ability to control or communicate; use multi-modal warnings rather than rely on visual cues; and add guarded motion to prevent collisions. Separate the payload camera from the platform, giving the pilot a dedicated "pilot-cam," and the experts a fully gimbaled payload.

IP over WDM Backbone Networks Multi-Layer Design: Effects on Cost and Durability

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Abstract—

Internet Service Providers (ISPs) commonly deploy two backbone routers at each central office to which access routers are connected in a dual-homed configuration to overcome the dependability difficulties caused by breakdowns and scheduled outages. Reliability is provided at the IP layer by the deployment of redundant backbone routers and the transport equipment needed to connect them. Yet, incorporating such redundant resources raises the network's overall cost. In order to minimise such redundant resources, a fundamental redesign of the backbone network that makes use of an adaptable optical transport network is greatly desired.

Hacking's Effect on Cybersecurity

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Abstract:

E-commerce, email, cloud computing, data sharing, applications, and many more good and useful things have been made possible for people by the increasing growth of the internet and machinery, whether it be mobile or computer technology, but there are also some dark and hidden aspects to it, such as network hacks, computer hacks, mobile breaches, backdoors, etc. As is well known, cybercrime is an activity that computer experts frequently engage in and whose prevalence is rising quickly. We all know that cybercrime is on the rise and was a popular practise among computer experts. Network disruption at the Organization, theft of priceless information and documents, and bank account hacking are all results of cybercrime. The administration has implemented numerous preventative measures. The government has taken preventive measures a lot of times. In this paper, we're going to discuss the types of hackers.

Keywords: Cyber security, Ethical hacking, Mobile Hacking, Wi-Fi hacking.

Electricity meter alerting system utilizing the Internet

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ABSTRACT

Many in today's society are oblivious of the expense of the energy used by numerous gadgets. In order to maintain a minimal slab rate of current consumptions for a set length of time, it will display the total units of power consumed and how many units are still available in order to make the end user aware of and limit the excess power usage. The goal of this project is to create a circuit that will be utilised by the end user to manage electrical energy usage and additional costs brought on by slight changes in slab categories; despite these changes being slight, they have a significant impact on the end user's bill. By making the end user aware of the power utilised, the end user can be encouraged to use the power appropriately. The end user is frequently informed of daily consumption by mobile SMS and email. Benefits of this project in terms of lower electricity costs.

Keywords: Short Message Service,E-mail,Electricity, Node MCU.

INSCRIBING BIG DATA ISSUES IMPLEMENTING HADOOP TECHNOLOGY

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Abstract:-

The dimension of the databases used in today's firms has been developing at exponential rates day via day. Simultaneously, the want to technique and analyze the large volumes of statistics for business selection making has additionally increased. In several business and scientificapplications, there is a need to system terabytes of data inefficient manner on each day bases. This has contributed to thehuge records trouble confronted with the aid of the industrydue to the lack of ability of traditional database structures and software tools to manage or method the large records units within tolerable time limits. Processing of statistics can include more than a few operations depending on utilization like culling, tagging, highlighting, indexing, searching, faceting, and so forth operations. It is not possible for single or few machines to shop or process this large amount of statistics in a restricted time period. This paper reports the investigational effort on big data problem and its best solution using Hadoop cluster, Hadoop Distributed File System (HDFS) intended for storage and using parallel processing to process big data sets by Map Reduce programming framework. We have completed prototype implementation of Hadoop cluster, HDFS storageand Map decrease framework for giving out large data sets by allowing for prototype of big data application situations. The results attained from various experiments designate favorable results of beyond approach to tackle big data problem.

Key words-- Big Data Problem, Hadoop cluster, Hadoop Distributed File System, Parallel Processing, Map Reduce

Indexing Value Cells by Table Header to Separate Table

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Abstract—

Understanding tabular data requires correct segmentation of a web table into its component sections as a necessary initial step. Our algorithmic approach to the segmentation problem is based on the fact that each data cell in the table is uniquely indexed by strings specifying row and column header pathways. Without employing any appearance features or natural language processing, we just segment the table using "logical layout analysis". We begin with a CSV table that keeps the two-dimensional layout and content of the original source table (such as an HTML table), but not the font size, font weight, or font colour. The splitting of the table into four quadrants around a minimum index point is implied by the indexing attribute of table headers. Thealgorithm finds the index point through an efficient guided search. Experimental results on a 200-table benchmark demonstrate the generality of the algorithm in handling a variety of table styles and forms.

Keywords— Indexing by header strings; minimum indexing point; table segmentation

Game-theoretic analysis of contributors' effort allocation in public projects

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Abstract

Public projects can succeed or fail for many reasons such as the feasibility of the original goal and
coor-dination among contributors. One major reason for failure is that insufficient work leaves the project partially
completed. For certain types of projects anything short of full completion is a failure (*e.g.,* feature request on
software projects in GitHub). Therefore, project success relies heavily on indi- viduals allocating sufficient effort.
When there are multiple public projects, each contributor needs to make decisions to best allocate his/her limited ef-
fort (*e.g.,* time) to projects while considering the ef- fort allocation decisions of other strategic contrib- utors and
his/her parameterized utilities based on values and costs for the projects. In this paper, we introduce a game-
theoretic effort allocation model of contributors to public projects for modeling ef- fort allocation of strategic
contributors. We study the related Nash equilibrium (NE) computational problems and provide NP-hardness results
for the existence of NE and polynomial-time algorithms for finding NE in restricted settings. Finally, we investigate
the inefficiency of NE measured by the price of anarchy and price of stability.

Droop Method Control of Parallel-connected AC to DC Converter for DC Microgrid Application

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Abstract

This paper presents the control of a single-phase ac to dc converter using the rotating reference frame control methodology wherein the phase angle (θ) obtained from a single-phase phase-locked loop is used for axis-transformation. The I_d, I_q currents and output voltage of the converter are then controlled by PI control strategy. The dc microgrid under study consists of two modules of the ac to dc converters connected in parallel topology using droop control technique. The simulation results based on Matlab/Simulink illustrate that I_d, I_q currents can be regulated by the designed PI controllers. Therefore, zero steady state error and simple power calculation are achieved. Also, real power sharing between the two converters is fulfilled by the parallel-connected converter topology with droop controller in such a dc microgrid system, while the output voltage is maintained at 600 V by a PI controller at the secondary control level.

Distributed Hadoop Map (HOG) Minimize grid usage

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Abstract—

Powerful data processing platforms like MapReduce are ideal for both professional and academic purposes. In this study, we create a brand-new Hadoop MapReduce architecture that runs on the Open Science Grid, which connects several institutions in the United States (HOG). It differs from earlier MapReduce systems, which functioned in specialised settings like clusters or clouds. Using the grid's flexible resources, HOG offers a free, elastic, and dynamic MapReduce environment. By converting data centres all over the United States into virtual racks and building multi-institution failure domains, HOG increases Hadoop's fault tolerance for wide-area data processing. Existing Hadoop MapReduce applications are unaffected by our changes to the framework. In the evaluation, we successfully extend HOG to 1100 nodes on the grid. Additionally, we evaluate HOG with a simulated Facebook Hadoop MapReduce workload. We conclude that HOG's rapid scalability can provide comparable performance to a dedicated Hadoop cluster.

Keywords - MapReduce, Grid computing, Middleware.

Data Security and Protection Issues inCloud Computing

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Abstract—

Cloud computing has numerous conceivable benefits, and many business applications and data are moving to public or hybrid clouds. Yet, firms, particularly big businesses, still wouldn't migrate some business-critical apps to the cloud. The market size for cloud computing is still very small compared to expectations. Consumers' concerns about cloud computing security, particularly those related to data security and privacy protection, continue to be the principal barrier to the uptake of cloud computing services. Throughout all phases of the data life cycle, this paper provides a succinct but comprehensive overview of data security and privacy protection issues related to cloud computing. This paper then covers some contemporary solutions. This paper concludes by describing next research on data security and privacy protection challenges.

Keywords- access control; cloud computing; cloud computingsecurity; data segregation; data security; privacy protection..

Low-duty-cycle Wireless Networks: Practical Synchronous Rendezvous (PSR)

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Abstract—

Low-duty-cycle radio operations have been proposed for wireless networks facing severe energy constraints. Despite energy savings, duty-cycling the radio creates transient-available wireless links, making communication rendezvous a challenging task under the practical issue of clock drift. To overcome limita- tions of prior work, this paper presents PSR, a practical design for synchronous rendezvous in low-duty-cycle wireless networks. The key idea behind PSR is to extract timing information nat- urally embedded in the pattern of radio duty-cycling, so that normal traffic in the network can be utilized as a "free" input for drift detection, which helps reduce (or even eliminate) the overhead of traditional time-stamp exchange with dedicated packets or bits. An energy-driven adaptive system is designed for clock calibration to strike a balance between energy efficiency and rendezvous precision in order to prevent an overuse of such free information that would result in energy waste. PSR is assessed using a combination of detailed simulations and test-bed trials, together with four alternative MAC methods. Findings demonstrate that PSR is applicable and efficient at various traffic loads and that it can be combined with those MAC protocols to increase their energy efficiency without substantially altering the original designs..

Detection of steel defect using the image processing algorithms

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Abstract:

This essay looks into the identification and categorization of steel surface flaws. For the purpose of identifying four common types of steel defects—holes, scratches, coil breaks, and rust—image processing methods are used. The outcomes demonstrate the effectiveness of the used algorithms in identifying steel defects. The applied image processing algorithms have an accuracy of 88.4%, 78%, 90.4%, and 90.3% on the hole, scratch, coil break, and rust defect, respectively, according to numerical data.

Keywords:

Automatic inspection, Image processing, Steel defect.

Design of multiplexer and jk flip flop for quantum computers using advanced reversible logic gates

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Abstract:

Reversible logic gates are used to create quantum circuits in the current emerging technology known as quantum computers. Reversible logic gates are the building blocks of quantum circuits, whereas classical logic gates are used in traditional digital circuits. By employing reversible logic, power consumption in digital circuits can be significantly decreased. In typical digital circuits, some bits of information are lost during logical operations because a sizable quantity of energy is squandered. Reversible logic gates can be used to prevent this information loss. Reversible logic gates are employed to boost speed and cut down on latency. Nanotechnology and complementary metal oxide semiconductor (CMOS) technology, which consumes less energy, both heavily rely on reversible technology. Advanced reversible logic gates like PV, SAM, Multiplexer, and JK flip flop are some of the reversible logic gates that are discussed in this work. JK flip flop is designed with both basic and sophisticated reversible logic gates. JK flip flop power and delay measurements were 2.49Mw and 2.18nsec for reversible logic gates and 2.019Mw and 1.59nsec for advanced reversible logic gates, respectively. These findings show that JK flip-flops with sophisticated reversible logic gates operate more quickly and with lower power consumption than JK flip-flops with basic reversible logic gates.

Keywords: Quantum computers, reversible logic, garbage outputs, Multiplexer, JK flip flop.

High Voltage Gain Interleaved DC Boost Converter Application for Photovoltaic Generation System

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Abstract

This paper introduces a new high-voltage boost-embedded DC-DC boost converter. This transformer is a non-isolated step-up transformer that can step up the DC voltage from an input voltage of 2 VDC to an output voltage of 130VDC. It is suitable for use with any DC renewable energy source such as solar power generation system etc. The power of this paper converter is 350 W. The proposed converter has a total of four DC boost converter modules connected in parallel. For the same purpose, these switching devices are controlled with a 90 degree offset between them thanks to the interlacing technology. This results in a smoother DC output. However, the high-gain DC-to-DC boost converter of this project was made by implementing a MATLAB/SIMULINK-based digital signal processing board (here TMS320F2812). The laboratory test shows that the transformer works very well and its performance is good.

Keywords: Non-isolated boost converter; 4 phase Interleave technique; DSP implementation.

Efficient Parallel Synthesis of Big Model Spaces with Parasol

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ABSTRACT

Although formal analysis is a useful tool for software engineers, there are well-known scalability limitations with modern formal analysis techniques. The issue is made worse by the fact that some software design domains, such as tradeoff analysis and security analysis, demand systematic exploration of possibly enormous model spaces. Few methods exist to enable the systematic exploration of vast model spaces, despite this pressing need. In order to increase the scalability of extensive formal model space exploration, this paper presents PARAsol, an approach and supporting tool suite. The model space is partitioned fairly using PARAsol's novel parallel model space synthesis method, which is supported by unsupervised learning to automatically generate domain knowledge. This allows PARAsol to synthesize the models in each partition in parallel, signif- icantly reducing synthesis time and making large-scale systematic model space exploration for real-world systems more tractable. Ourempirical results corroborate that PARAsol substantially reduces (by460% on average) the time required for model space synthesis, com-pared to state-of-the-art model space synthesis techniques relying on both incremental and parallel constraint solving technologies as well as competing, non-learning-based partitioning methods.

KEYWORDS

Formal analysis, bounded verification, tradespace analysis, parallel.

Opportunities and Challenges of Wireless SensorNetworks in Smart Grid

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Abstract—

Wireless sensor networks (WSNs), which are cooperative and less expensive than traditional communication methods employed in today's electric power systems, provide a number of advantages. WSNs are now widely acknowledged as a promising technology that can improve a number of current electric power systems, including generation, delivery, and usage. As a result, they are now an essential part of the smart grid, the next-generation electric power system. Unfortunately, the reliability of WSN communications in smart-grid applications is severely hampered by the harsh and complicated surroundings of electric power systems. This study begins by providing an overview of the use of WSNs for electric power systems, along with opportunities and obstacles, and it then paves the way for future work in a number of understudied research topics in numerous smart-grid applications. A thorough experimental research on the statistical characterization of the wireless channel in several electric-power-system contexts, such as a 500-kV substation, an industrial power control room, and an underground network transformer vault, is then presented. The background noise, channel characteristics, and attenuation in the 2.4-GHz frequency band have been measured in real-world power delivery and distribution systems using field experiments on IEEE 802.15.4-compliant wireless sensor nodes. Overall, the empirical measurements and experimental findings help to inform design choices and trade-offs for WSN-based smart-grid applications and offer useful insights on IEEE 802.15.4-compliant sensor network platforms.

Key Words— CC2420, diagnostics, IEEE 802.15.4, link-quality indicator (LQI), monitoring, received signal strength indicator (RSSI), smart grid, wireless sensor networks (WSNs).

Photovoltaic Generating System Application of High Voltage Gain Interleaved DC Boost Converter

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Abstract

An innovative high voltage gain interleaved DC boost converter is presented in this research. This boost converter, which can level DC voltage from 24 Vdc input voltage to 130 Vdc output voltage, is non-isolated. This is suited for use in the development of any dc-output renewable energy source, including PV production systems and others. This paper's converter has a 350W power rating. The suggested converter contains a total of four parallel-connected DC boost converter modules. Due to an interleaving mechanism, these switching devices are controlled by 90 degree shifting to one another for the same function. An output dc current will be smoother as a result of this. Nonetheless, the TMS320F2812 Digital Signal Processing Board was used to create the High Gain DC Boost Converter in this project. It is MATLAB and SIMULINK based. The laboratory test demonstrates that the converter performs admirably, and its outcome is really satisfying.

Indexing Value Cells by Table Headers to Segment Tables

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ABSTRACT

In order to analyse tabular data, it is crucial to correctly segment a web table into its individual areas. Our algorithmic approach to the segmentation problem is based on the fact that each data cell in the table is uniquely indexed by strings specifying row and column header pathways. Without employing any appearance features or natural language processing, we just segment the table using "logical layout analysis". We begin with a CSV table that keeps the two-dimensional layout and content of the original source table (such as an HTML table), but not the font size, font weight, or font colour. The splitting of the table into four quadrants around a minimum index point is implied by the indexing attribute of table headers. The technique uses an effective guided search to discover the index point.

Field Research Assessing Data-to-Decision Obstacles and Delays Using Miniature Unmanned Aerial Systems

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Abstract—

This paper reports on lessons learned in rapidly getting data from a small tactical unmanned aerial system (sUAS) to an incident commander during a 2012 high fidelity hazardous materials exercise. In order to capture the Public Safety data-to- decision path, observational data was collected on three flights of an AirRobot 100B sUAS, used extensively by the US Army, with HazMat specialists as part of a chemical train derailment exercise at the 2012 Summer Institute at Disaster City R . The Summer Institute found that (i) the data path requires an average of 4 steps to go from the field to the incident commander, (ii) there is no standard data format which reduces the value of the data nor agreed upon paths for submission which leads to "broken" paths, (iii) redundant data-to-decision paths are essential in order to ensure information flow, and (iv) the average time from when the data was seen by the sUAS to its arrival at incident command was 27.8 minutes. Three recommendations were also made for device manufacturers based on the observations: I sUAS should have a dependable USB flash drive recording capability; (ii) all video and photographic imagery should have the necessary GPS and heading information embedded in the data; and (iii) systems should be able to provide cellular and wireless transmission capabilities (including web browsers and email) as responders may not have access to public phone Wi-Fi and internet; According to the report, current quality of service (QoS) measures only take into account device-to-device transfer speeds, not the timing of the decision maker's view of the data or whether it is in an actionable format.

Methods for Data Security in Cloud Computing

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ABSTRACT:

These days, there is a huge demand for secure cloud computing for data, which has led to a rise in popularity for cloud computing. These days, cloud computing is receiving a lot of attention and appreciation for its numerous safeguards against problems. These safeguards include software integrity, virtualization, identification control, record safety, and community security. On the internet, a lot of information is shared, including documents. Today, transferring data to distant computers without a guarantee of record protection from cloud computing is one of the reasons businesses transfer their data. The advice for information security in cloud computing is extensive. The most widely used security measures are service socket layer (SSL) encryption on intrusion on detection device. The main purpose of this paper is analyses and examine the maximum crucial safety for the problems.

KEYWORDS*: Access control, Authentication, Authorization, Cloud computing, Confidentiality, Data Protection.

IOT-BASED UNDER GROUND DRAINAGE MONITORING SYSTEM

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Abstract:

India has revealed a plan to create 100 smart cities. One must take into account a variety of factors when creating a smart city, including smart water, smart power, and smart transportation. Smart subsurface infrastructure, such as water pipes, communication cables, gas pipelines, electric flow, etc., will be required. Since subterranean drainage systems are used in the majority of Indian cities, it is crucial that they function properly in order to maintain the city's cleanliness, safety, and health. They risk contaminating clean water with drainage water and spreading infectious diseases if they don't manage the drainage system. Hence, several types of effort have been done to find, manage, and keep up with these underground systems. Leaks and bursts are also inevitable parts of managing a water distribution system, and if they go unnoticed for a long time, they can result in severe water loss within a distribution network. This project is an example of the implementation and design processes for managing and monitoring an underground drainage system using several methodologies. Additionally, it provides a description of a water-wise system and a detection technique for sewer pipeline leaks. A portion of the condition rating model for sustainable water mains and underground pipelines as well as the intelligent system for their assessment, rehabilitation, and management are also explained.

LOG ANALYSIS TECHNIQUES: A BRIEF STUDY

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Abstract—
Log Analysis is a critical procedure in most framework and system exercises where log information is utilized for different reasons, for example, for execution checking, security examining or notwithstanding for revealing and profiling. Nonetheless, as years cruised by, the volume of log information increments alongside the span of the framework just as the quantity of clients included. Customary or existing log analyser instruments are not ready to deal with the huge measure of information. Thusly, Big Data is the answer for defeated this issue. The principle motivation behind this paper is to introduce a survey of log document investigation in Big Data condition dependent on past research works. This paper likewise features the qualities of Big Data just as Hadoop Framework that has been generally utilized as Big Data application. Results from the papers assessed demonstrate that dominant part analysts connected MapReduce as the principle segment of Hadoop for investigating the log records and HDFS as the information stockpiling. Past analysts have likewise utilized different instruments and calculations together with the Hadoop Framework for investigation purposes. The discoveries of this paper will give an intelligible audit of Hadoop use execution in breaking down various kinds of log records and prescribe justifiable outcomes for end clients to use in future work.

Keywords— Hadoop; HDFS; log analysis; log files; Map Reduce.

Transient Voltage Monitoring Via the Construction of a Broadband Resistive-Capacitive Parallel-Connection Voltage Divider

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Abstract:

In order to analyse the root cause of power system faults and improve the insulation coordination of power equipment, transient voltage measurements on-site are of utmost importance. Because of their typically limited bandwidth, conventional voltage transformers cannot reliably assess a variety of transient voltages in power systems. This study develops a wideband parallel resistive-capacitive voltage divider for online transient voltage monitoring in a 220 kV power grid. The structures of the high-voltage and low-voltage arms were designed. The internal electric field distribution of the high-voltage arm was analyzed. The influence factors and improvement techniques of the upper frequency limit were studied. The parameters of the elements of the divider were determined. The voltage withstand performances and scale factors under lightning impulses and AC and DC voltages, the temperature stabilities of scale factors and the step response and bandwidth of the developed voltage divider were tested. The results show that the deviations of the scale factors under various voltage waveforms and different temperatures ranging from -20 to 40 $^\circ$C are within 3%. The withstand voltage meets the relevant requirements specified in IEC60071-1-2011. The step response 10~90% rise time is approximately 29 ns, and the 3 dB bandwidth covers the range of DC to 10 MHz.

Keywords: Resistive–capacitive voltage divider; transient voltage monitoring; scale factor; step response; broadband; temperature stability.

Matchmaking is a new Map:Reduce scheduling technique.

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Abstract—

Using MapReduce, large-scale data processing may be accomplished successfully. In order to achieve acceptable performance, a MapReduce scheduler must enhance data locality to prevent unnecessary data transport (placing tasks on nodes that contain their input data). To enhance the data locality of map jobs, this work creates a new MapReduce scheduling technique. The Hadoop fair scheduler and default FIFO scheduler both use this technique. In order to assess our approach, we compare MapReduce scheduling methods with and without our strategy, as well as with an existing data locality augmentation methodology (i.e., the delay algorithm developed by Facebook). Our method consistently generates map jobs with the highest data locality rate and the fastest response times, according to experimental results. Moreover, in contrast to the delay approach . Furthermore, unlike the delay algorithm, it does not require an intricate parameter tuning process.

Keywords— MapReduce; Hadoop; data locality; scheduling technique

Three-Level Back-to-Back Converter Simulation for Wind Turbine Energy Source

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Abstract

This paper presents a simulation of a three-level inverter for a wind turbine power source. This article focuses on the energy source of wind turbines and defines the normal value of the voltage of the wind energy source. The operation of the converter can be simulated using the MATLAB/SIMULINK program. In addition, with SVPWM, the inverter voltage and current can be properly controlled. The simulation results showed that the output current waveform has less signal distortion than the input current waveform, and the output voltage waveform is also larger than the input. Therefore, this converter can convert voltage and current from AC to DC and DC to AC to improve performance and can be connected to the grid.

Keywords: Three-Level Back-to-Back Converter; Space Vector Pulse Width Modulation.

Making Tests More Powerful to Check Exception Handling Code

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Abstract—

Validating code that handles exceptional behaviour is challenging, especially when working with external resources that might be noisy and unreliable. This is because validating code for exceptional behaviour necessitates two things: 1) systematically exploring the space of exceptions that these external resources might throw, and 2) setting up the context to cause particular patterns of exceptions. In this paper, we describe a method to overcome those challenges by undertaking a thorough amplification of the space of unusual behaviour connected to an external resource that is put to the test by a test suite. By simulating an external resource so that it either returns normally or throws an exception in accordance with a preset pattern, each amplification aims to expose a program's exception handling architecture to novel behaviour. According to our evaluation of the method, it is entirely automatable, capable of detecting 65% of the flaws mentioned in this type of bug report, and accurate enough that 77% of the discovered anomalies correlate to flaws rectified by the developers.

Keywords-Test transformation; exception handling.

Mixed-Criticality Parallel Task Scheduling on Partitioned Multiprocessors

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Abstract—

An increase in research interest in scheduling mixed-criticality systems can be attributed to the trend towards platform integration in embedded systems. Unfortunately, the majority of past initiatives have neglected intra-task parallelism and instead focused on scheduling sequential processes. In this article, we examine the scheduling of parallel jobs with mixed criticalities on multiprocessor platforms. We suggest a synchronous mixed-criticality task model in which every job is divided into segments, each of which has an infinite number of parallel threads that synchronise at the end of the segment. To divide mixed-criticality parallel work into mixed-criticality sequential jobs, a novel MinLoad algorithm is created. With the help of this decomposition, we can apply multiprocessor scheduling of mixed-criticality parallel workloads to current mixed-criticality scheduling techniques and schedulability analyses. Additionally, our MinLoad job decomposition algorithm is made to make it simpler to schedule the decomposed sequential mixed-criticality activities, necessitating smaller multiprocessor platforms for mixed-criticality systems.

Mechanism and performance of forward and reverse bias electroluminescence at 1.54 *μ*m from Er-doped Si diodes

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ABSTRACT

The processes and performance of the 1.54 m electroluminescence from Er-doped Si diodes have been clarified. We were able to pinpoint the causes of the 2–10 times greater EL yield that is seen during reverse bias operation by careful studies of the spectrum lineshape, current, and temperature dependences of the modulation performances. In particular, we discovered that reverse bias excites a wider spread of luminous Er centers than forward bias, as is evident from a difference in EL lineshapes. Moreover, under forward bias, processing-related dislocations strongly influence the EL temperature quenching, whereas under reverse bias, no effect has been seen.

Effects of Soil Moisture on Underground Cognitive Radio Networks

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Abstract—

The main characteristics of wireless subterranean communications are the impact of soil moisture on antenna return loss, bandwidth, and route loss. In this study, the effects of soil moisture, specifically on the capacity of subterranean wireless channels, are examined. It is demonstrated that there exists an ideal operating frequency that maximises channel capacity for a given antenna and soil moisture level. . This paper promotes the use of cognitive radio systems, which can adjust operation frequency in a wide range, for efficiency for wireless underground communication. While existing research on wireless underground communication is focused on fixed-frequency systems, this paper calls for the use of cognitive radio systems. Also, it has been demonstrated that the soil type has a significant impact on channel capacity and that capacity can be increased by employing longer antennas with lower operating frequencies. Other constraints, including as the size of the device and the difficulty of deployment, also place a limit on the antenna's size.

Voltage Control by DQ Frame Technique of SVPWM AC-DC Converter

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Abstract

This paper presents a simulation model of a space vector pulse width modulation (SVPWM) rectifier using MATLAB/Simulink capable of stabilizing a 500V DC output voltage of a 3-phase 300V system using decoupling method with dq frame technique. The model is tested for ± 10% variation of the nominal input voltage. From the simulation model, it can be used for the real-time control system of a digital signal processing board (such as DS110). Together, it can also be easily and effectively designed into a real circuit. Experimental results show that the performance of the SVPWM rectifier presented in this paper is sufficient for widespread use.

Keywords: About DQ Frame; SVPWM Rectifier; Decoupling Control.

Slip Energy Recovery Drive Speed and Power Regulation Utilizing Voltage-Source PWM Converter with Current Controlled Method

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Abstract

This paper introduces the speed and power control a slip energy recovery drive using voltage-source PWM converter with current-controlled technique. The slip energy occurred in the rotor circuit is transferred back to ac mains supply through a reactor and a step up transformer. The objective of the current-controlled technique is to increase power factor of the system and to reduce low order harmonics of the input line current. The drive system is designed and implemented using a voltage source inverter in conjunction with a boost chopper for DC link voltage, instead of a conventional drive using a 6 pulse converter or a Scherbius system. The slip power is recovered by the help of a voltage source inverter (VSI) based on a current-controlled technique. In order to keep the speed of the wound rotor induction motor constant over a certain range of operating conditions, the servo state feedback controller designed by a linear quadratic regulator (LQR) is also introduced and the PI controller designed by pole placement method is also introduced in control the slip power this paper. The overall control system is implemented on DSP, DS1104 TMS320F240 controller board. A 1 kW wound motor is employed for testing. It is found that the motor speed can be controlled to be constant in the operating range of 600-1200 rpm at no load and full load. It is also found that the harmonics of the input ac line current is reduced while the ac line input power factor is increased.

Keywords: Slip energy recovery; wound rotor induction motor; voltage source inverter, current control.

AN EDUCATIONAL APPROACH TO A DETAILED APPLICATION OF THE TL494 PSPICE MODEL IN THE DESIGN OF SWITCHING REGULATORS

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Abstract:

This study explains how to analyse switching regulators using the TL494 PSPICE MODEL with OrCAD Capture, which can help newcomers like undergraduate students understand switching regulators. Although none of the literature gives the necessary knowledge to work with the TL494 simulation model, this research primarily focuses on the application of simulation models. Although though the TL494 chip is a pretty straightforward piece of hardware, working with the Pspice model of the TL494 without sufficient Pspice software understanding might be challenging. With the aid of a buck converter, the use of the simulation model for this chip with OrCAD Capture is illustrated. This application report can be expanded to include more converters that are both isolated and not isolated.

Keywords: TL494 Pspice Model, OrCAD Capture, convergence, RELTOL, V_PWM, INPUT_VTH, V_DTC.

Aerial Systems Miniature Unmanned: Exploratory Findings for a Mission Specialist Interface

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Abstract—

This study examines how a dedicated Mission Specialist interface for small unmanned aerial vehicles interacts with humans (UAS). According to recent HRI results from the literature on micro UAS, a Mission Specialist role necessitates a compact, portable, and visually appealing software-based interface. An HRI investigation framework, five synthesised design principles, and a system architecture for a dedicated Mission Specialist interface were produced as a result of a literature review on human-robot team modelling, human-machine interaction technologies, and interaction principles applicable to micro UAS. . Using 16 specialised emergency responders, an exploratory field study was conducted to install and evaluate the interface. A specialised Mission Specialist interface may prove to be a beneficial tool for future HRI research to examine role performance in micro UAS, according to study findings.*Keywords*—User Interface Designs and Usability Evaluations; Human Factors and Evaluation Methodologies; HRI Applications (Search and Rescue).