ROHINI

COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE and affiliated to Anna University,(An ISO Certified Institution)

International Conference on

Recent Innovations in Computer and Communication

ICRICC-20

Organized By

Department of Electrical and Electronics Engineering

Rohini College of Engineering and Technology

Published by:

Pondicherry: IJARCSET

International journal of advanced research in computer science and engineering technologies

ISSN:

2454-9924

URL:

www.ijarcset.in

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Contents

Design and implementationofac/dcconverter fed hybridvehicle

Mr.M.Arunarasan, Mr.V.Ponselvan

Abstract

In order to enhance the power transformation stage's power transfer capabilities and efficiency, in this article, improved three-port two step-up single-ended primary-inductor converters (SEPIC) converter fed (Photovoltaic)PV- Hybrid Electric Vehicle was proposed. In comparison to the standard single-stage SEPIC, the proposed converter accepts a wider range of input voltages. The proposed three-port converter uses a multiple-winding high-frequency transformer (HFT) to integrate the dual sources and provide greater voltage gain with lesser elements. Furthermore, by predicting the drive torque need, the power management algorithm (PMA) included with the proposed PV-hybrid electric vehicle (HEV) minimizes the drive motor's power consumption. An experimental model with a power output of 6 kW and a voltage range of 12 to 600 volts has been created and tested. The designed model has 94.11% efficiency.

Iot Based Monitoring And Controlling Of Solar Tracking System For Smart Grid Application

Mrs.P.Abinaya, Mrs.S.Nithya

Abstract

Internet of Things (IoT) technologies, along with economies of scale and advances in hardware, software, and network technologies, have accelerated the explosion of connected objects across the Internet. A connected object can be controlled online from an IoT platform and can send, receive, and process various and varied data. In this chapter, we leverage some of the IoT technologies to propose a simple and low-cost IoT solution to monitor and control a smart dual-axis solar tracker system for performance evaluation. The solution also includes alert notifications to inform a remote user through phone or mail (or both) when a sensor has reached a certain predefined event. The solution is designed based on low-cost and easy-to-use hardware and software and an online open-source IoT platform. The design aspects of the IoT-based solar tracker are extensively described in this chapter. Moreover, a prototype of the IoT-based solar tracker has been manufactured and tested. Test results demonstrate that solar tracker data can be sent easily and properly and can be directly monitored online, as well as the solar tracker, can take commands from the IoT monitoring application.

Application Of K-Nearest Neighbor (Knn) Machine Algorithmfor Transformer Fault Classification

Mrs.V.Adshiya, Mr.P.Jeyakumar

Abstract

Power transformer forms a very important link in the power system. A fault in transformer can cause a huge loss to the utility and consumer depending on the duration of the outage. Dissolved Gas Analysis (DGA) acts as a key tool to diagnose transformer fault based on gas ratios. In this paper an effort to predict Power transformer fault more precisely using kNN algorithm has been made. DGA data of various transformer oil samples were collected and analyzed to select the best kNN algorithm to be used and to observe the prediction accuracy.

Energy Efficient Secure Multipath Routing Scheme For Wireless Sensor Networks

Ajay.N , Dr. G.K.Jebash Samuel

Abstract

Wireless sensor network connected with small sensor for sensing the data and transfer data between source and sink. The sensor node has low computing power, bandwidth and energy. So, the traditional wired security mechanism not able to use for preventing the attacks in wireless sensor network. The multipath routing protocol uses to transfer the data in securing and reliable. Many secure multipath routing protocols are introduced for reducing the attacks in wireless sensor network. The secured multipath routing protocol concentrates on security and not for reliable data transmission and energy efficient data transmission. In this paper, we focus the Energy efficient Secure Multipath Routing Protocol (EESM) protocol. The EESM protocol divided into three phases Route construction, Transfer data and Route maintenance and security. It uses Ant Colony optimization algorithm for finding the shortest path between the sensor nodes. This source initiated (Base Station) protocol which uses public cryptography for secure the data and introduce the protocol schema to transfer the data from sink to source.

Electronic Health Record Using Blockchainemerging Technology

Anish.R , Mr.V.Ponselvan

Abstract

With increased specialization of health care services and high levels of patient mobility, accessing health care services across multiple hospitals or clinics has become very common for diagnosis and treatment, particularly for patients with chronic diseases such as cancer. With informed knowledge of a patient's history, physicians can make prompt clinical decisions for smarter, safer, and more efficient care. However, due to the privacy and high sensitivity of electronic health records (EHR), most EHR data sharing still happens through fax or mail due to the lack of systematic infrastructure support for secure, trustable health data sharing, which can also cause major delays in patient care.

A Review Of Underground Pipeline Leakage And Sinkhole Monitoring Methods Based On Wireless Sensor Networking

Antonypaul ,.Murugan. G

Abstract

Major metropolitan cities worldwide have extensively invested to secure utilities and build state-of-the-art infrastructure related to underground fluid transportation. Sewer and water pipelines make our lives extremely convenient when they function appropriately. However, leakages in underground pipe mains causes sinkholes and drinking-water scarcity. Sinkholes are the complex problems stemming from the interaction of leaked water and ground. The aim of this work is to review the existing methods for monitoring leakage in underground pipelines, the sinkholes caused by these leakages, and the viability of wireless sensor networking (WSN) for monitoring leakages and sinkholes. Herein, the authors have discussed the methods based on different objectives and their applicability via various approaches—(1) patent analysis; (2) web-of-science analysis; (3) WSN-based pipeline leakage and sinkhole monitoring. The study shows that the research on sinkholes due to leakages in sewer and water pipelines by using WSN is still in a premature stage and needs extensive investigation and research contributions. Additionally, the authors have suggested prospects for future research by comparing, analyzing, and classifying the reviewed methods. This study advocates collocating WSN, Internet of things, and artificial intelligence with pipeline monitoring methods to resolve the issues of the sinkhole occurrence.

Keywords:

WSN; **pipeline leakage**; **human-induced sinkhole**; **leakage detection**; **sewer pipeline**; **sensors**

Water Monitoring System

Arunsingh D, Mrs.Thangasakthi.T

Abstract:
This paper aims at designing a Smart Water Monitoring System (SWMS) for real-time water quality and usage monitoring. It consists of two parts: Smart Water Quantity meter and Smart Water Quality meter. The objective of designing Smart Water Quantity Meter is to ensure water conservation by monitoring the amount of water consumed by a household, notifying the same to the consumer and the authority. A three-slab billing system generates consumption bill according to the quantity consumed. The Smart Water Quality meter checks the purity of portable water that the consumer receives, by measuring five qualitative parameters of water viz. pH, temperature, turbidity, dissolved oxygen and conductivity. The system ensures to prevent any health hazards or potential threats caused due to accidental seepage of sewage or farm release into the portable water. An online monitoring system is to provide these data on the cloud in real-time. Any violations in either the usage limit or water quality is immediately notified to the consumer and authority via SMS and an alert signal generated by the system.

Footstep power generation system using piezo electric sensor

Bebin Jasper S, Mr.Padma Kumar.R

ABSTRACT:

In day today life the utilization of power turns to be necessary for each work .The power delivered in this paper will not contaminate the surroundings and it is also will not to rely upon the climate conditions. The paper proposes a novel technique for the creation of power utilizing piezoelectric sensors kept along the footpaths which can ready to charge the battery and ready to supply the force at whatever time of our prerequisite. The footstep power generation technique through piezoelectric sensors produces electrical force by changing mechanical energy of the development of individuals on the floor to electrical energy. The benefits of piezoelectric force generation framework is that it is sheltered and secure to utilize, it doesn't make any issue or distress for the general population strolling through footpath, and it is absolutely chance free strategy. Footstep power generation technique has mechanical part and in addition electrical part, however the electrical and mechanical losses are negligible. This framework additionally has the ability to store the electrical force away battery. The power produced by this technique can be utilized for helping up the road lights, additionally for activity reason, sign boards of streets. At long last the force which will be abandoned can be given to national grid for power reason.

KEYWORDS: Piezoelectric sensors, Battery, Electricity, Footstep power generation.

Multi Cloud Data Storage System A Smart Building Energy Management And Pricing System With Renewable Energy Resources

Dhinesh Pon Kumar N , Mr.Sanju S

Abstract and Figures

Energy plays a pivotal role for economic development of a country. A reliable energy source is needed to improve the living standards of people. To achieve such a goal, governments and industries are trying to install a new energy infrastructure called the "Smart Grid". This helps to manage the electricity generation and distribution in an efficient manner. Buildings and other structures are the biggest consumers of electricity. There is a need to reduce the energy consumption so that the resources can be utilized efficiently. Therefore, in this paper, we give a comprehensive state-of-the-art on various recent techniques and solutions which provide energy savings in smart homes and buildings. This includes statistical models, cloud computing based solutions, fog computing and smart metering based architectures, and several other IoT (internet of things) inspired solutions. We also present a hypothetical model that treats energy supply and usage in buildings as a self-managing energy system (SES). This paper is concluded by highlighting several open issues and challenges related to energy management in buildings.

Voltage Security Enhancement In Power System

Elango S , Dr.T.Sreedhar

Abstract

Power system security analysis plays key role in enhancing the system security and to avoid the system collapse condition. In this paper, a novel severity function is formulated using transmission line loadings and bus voltage magnitude deviations. The proposed severity function and generation fuel cost objectives are analyzed under transmission line(s) and/or generator(s) contingency conditions. The system security under contingency conditions is analyzed using optimal power flow problem. An improved teaching learning based optimization (ITLBO) algorithm has been presented. To enhance the system security under contingency conditions in the presence of unified power flow controller (UPFC), it is necessary to identify an optimal location to install this device. Voltage source based power injection model of UPFC, incorporation procedure and optimal location identification strategy based on line overload sensitivity indexes are proposed. The entire proposed methodology is tested on standard IEEE-30 bus test system with supporting numerical and graphical results.

Ann Based Sensorless Speed Control Of Bldc Motor

Gayathiri C , Dr. D. Sam Harison

Abstract

BLDC motor applications require precise position and speed measurements, traditionally obtained with sensors. This article presents a method for estimating those measurements without position sensors using terminal phase voltages with attenuated spurious, acquired with a FPGA that also operates a PWM-controlled inverter. Voltages are labelled with electrical and virtual rotor states using an encoder that provides training and testing data for two three-layer ANNs with perceptron-based cascade topology. The first ANN estimates the position from features of voltages with incremental timestamps, and the second ANN estimates the speed from features of position differentials considering timestamps in an acquisition window. Sensor-based training and sensorless testing at 125–1,500 rpm with a loaded 8-pole-pair motor obtained absolute errors of 0.8 electrical degrees and 22 rpm. Results conclude that the overall position estimation significantly improved conventional and advanced methods, and the speed estimation slightly improved conventional methods, but was worse than in advanced ones.

Power Flow Management In Dc Grid For Residential Photovoltaic Systems

Jeeva A , Mr.Basker .C

Abstract:
Today there is a rapid proliferation of DC loads into the market and DC micro grid with renewable energy sources is emerging as a possible solution to meet growing energy demand. As different energy sources like solar, wind, fuel cell, and diesel generators can be integrated into the DC grid, Management of power flow among the sources is essential. In this paper, a control strategy for Management of power flow in DC micro grid with solar and wind energy sources is presented. As the regulation of voltage profile is important in a standalone system, a dedicated converter is to be employed for maintaining the DC link voltage. DC link voltage is regulated by the battery circuit while maximum power is extracted from Solar and Wind to feed the loads connected at the DC bus. A powerflow algorithm is developed to control among three sources in the DC Microgrid. The algorithm is tested for various load conditions and for fluctuations in solar and wind power in MATLAB/SIMULINK environment.

Implementation Of She Pwm Based Cascaded H-Bridge Multilevel Inverter Using Newton Raphson Method

Kani Rajan D 1 Mr.Jeyakumar. P

Abstract and Figures

span lang="EN-US">Multilevel inverters are emerging as the new breed of power converter options for high power applications. They typically synthesis the staircase voltage waveform (from several dc sources) which reduced harmonic content. This paper presents a simple selective harmonic elimination (SHE) modulation for single-phase cascaded H-bridge (CHB) multilevel inverter. The optimum switching angle of the transcendental equations describing the fundamental and harmonic components is solved by means of the Newton-Raphson (NR) method. The proposed SHE scheme is performed through simulation using MATLAB/Simulink. This simulation results are then verified through experiment using Altera DE0-Nano field-programmable gate array (FPGA). The proposed SHE is efficient in eliminating the lowest-order harmonics and producing a higher quality output waveform with a better harmonic profile

An Optimal Scheduling Scheme In Future Smart Grid Network

Keerthana M 1, Mr.G.K.Jabash Samuel 2

Abstract

The implementation of demand response can not only ensure the stability of power system, but also reduce the cost of user's power consumption. However, the real-time, fine-grained bi-directional communication between smart meters of smart homes and the power control center may lead to the privacy leakage of users. Aiming at the problems above, an optimal scheduling scheme for smart home electricity considering demand response and privacy protection is proposed. First of all, the smart home load models are established under two kinds of demand response, and then the BAS algorithm is used to get the lowest cost of electricity consumption. In addition, the user's privacy are protected with the help of energy storage of electric vehicle to blur user's electricity consumption data, and a privacy quantification method with adjustable weight is given. The simulation results show that the scheme can significantly reduce the user's electricity cost by arranging household electricity reasonably in response to power grid DR, the users can also adjust the value of privacy protection weight α to meet their privacy and cost requirements.

Svm Based Finite Control Set Model Predictive Control Technique For Mppt Of Photovoltaic Array

Kumaran A.N.D , Mr.Ponselvan. V

Abstract

Photovoltaic (PV) power generation is the main aspect of new energy power generation, and it is an important means to achieve the goal of carbon neutrality. When the PV system is connected to the grid, the nonlinear load of the grid will affect the power quality and consume reactive power. This paper proposes a PV power generation grid-connected system to improve power quality, with an active power filter (APF) function. Through the maximum power point tracking (MPPT) method, PV power generation can operate at the maximum power point and play the function of harmonic and reactive power compensation at the load side. To improve the dynamic performance of the grid-connected PV system and harmonic compensation simultaneously, multistep finite control set model predictive control (FCS-MPC) is adopted for the grid-connected module. The whole system does not need additional equipment, as it plays the role of two devices and effectively reduces the input cost. In this paper, the proposed structure and multistep FCS-MPC are verified in MATLAB/Simulink. The results show that the system injects the maximum power into the power grid at the same time when the load changes and compensates the harmonic generated by the nonlinear load of the power grid so that the total harmonic distortion of the power grid can meet the operation standard, and the system has good dynamic performance and steady-state performance.

Detection Of Patient Vital Signs With Wearable Sensors Using Iot

Muthuvel Indhiran G , Mr.Murugan. G

Abstract

Health care is one of the least funded sectors in Bangladesh and many other similar developing countries. People living in rural and remote areas do not have access to proper health care, and when they do, it is too expensive. This research aimed to develop a real-time health monitoring system that is cheap, easy to use, and accessible by doctors and patients. The system consists of several Internet of Things (IoT)-based sensors connected to an Arduino microprocessor, which thus measures the vital body signs of the patients. The measured readings are then transmitted to an Android application on a smartphone via a Bluetooth module. The sensors are connected to analog inputs. These sensors measure analog data, which is amplified by the microprocessor after being sorted. Doctors can also carry out the diagnosis of ailments using the data collected remotely from the patient. An Android-based mobile application that interfaces with a web-based application is implemented for efficient patients-doctors dual real-time communication. The Android application, which is connected to a MySQL database, updates the said database, which updates and displays the readings on a website accessible by both doctors and patients. Initially, the health monitor was tested using an Arduino Integrated Development Environment (IDE) monitor and a single user. Once initial simulations were

successful, the proposed system was tested on five different real-human test subjects. The testing of the wireless health monitor produced successful results that measured patient vitals with a high level of accuracy. The proposed IoT-based system monitors vital signs such as the patient's body temperature, heart rate, ECG, SpO2 levels, blood pressure, and glucose levels. This system also includes a medical treatment plan by the doctors. The proposed system is novel as it integrates the IoT-based patient monitoring system with telemedicine. This proposed system has different sensors for real-time measuring the vital signs of the human body. A mobile and web application have also been integrated with this system for real-time remote patient monitoring and treatment plan. There are now systems available that only offer a telemedicine facility, where patients and doctors can have discussions, but do not have an IoT-based patient vital sign monitoring system integrated with telemedicine. The proposed system in this paper has the facility of IoT-based patient vital signs monitoring integrated with telemedicine, which makes this research work novel. The proposed system will increase the life expectancy of people throughout the world.

Keywords: Android application; Health care; Internet of things; Patient monitoring; Real-time; Remote health care; Smart; Wearable sensors; Wireless health monitoring.

Pv Cell Based Cascaded H-Bridge Multilevel Inverter Using She Pwm

Periya Nayaki U 1, Mr.Jeyakumar. P 2

Abstract:
Nowadays, improving the voltage quality has gained more attention with the widespread adoption of distributed generation (DG) systems such as photovoltaics (PV) panels, fuel cells, and wind turbines. This paper presents high-quality voltage requirements for systems fed by the fuel cell. In renewable energy-based sources, the inverter is generally employed to provide an AC voltage with a desirable amplitude to meet the requirements of the load and transmission system due to generating a high-quality voltage with less distortion. This paper proposes a structure composed of fuel cells in which the modularity is improved, and the cost of passive filter elements is reduced. Such a topology is functional in applications where the total harmonic distortion (THD) index is essential. This work proposes a method for regulating the DC-link to improve the quality of the output voltage. The SHE method solved by the Particle Swarm Optimization (PSO) algorithm in the H-Bridge 5 level inverter (CHB) has been studied to demonstrate the validity of the proposed idea.

A New Control System Design To Improve Power Factor And Reduce Harmonics In Distribution Network Using D-Statcom

Dinesh Kumar C, Hema N, G.Murugan

Abstract:
Harmonics and power factor control are two key points in steady state operation of the electrical power systems. D-STATCOM and its control system can be used to improve the power system

performance in the case of power quality issues. Thus in this paper, a new approach of predictive control system based on discrete state space system is used to control the instantaneous power compensator of D-STATCOM for compensating harmonics and improve power factor is presented. The proposed control method is useful to limit some power quality disturbances and also some steady state properties. To evaluate the performance of the proposed control methods and compare them with conventional control methods, 22 kV distribution network with a nonlinear load such as a three-phase rectifier and also added inductive load is examined. Simulation result indicates that the proposed control strategy improved the power factor and reducing THD compared to the conventional control method.

A New Control System Design Using D-Statcom To Improve Power Factor And Reduce Harmonics In A Distribution Network

Mathan P , Mr.G.K.Jabash Samuel

Abstract
Harmonics and power factor control are two key points in steady state operation of the electrical power systems. D-STATCOM and its control system can be used to improve the power system performance in the case of power quality issues. Thus in this paper, a new approach of predictive control system based on discrete state space system is used to control the instantaneous power compensator of D-STATCOM for compensating harmonics and improve power factor is presented. The proposed control method is useful to limit some power quality disturbances and also some steady state properties. To evaluate the performance of the proposed control methods and compare them with conventional control methods, 22 kV distribution network with a nonlinear load such as a three-phase rectifier and also added inductive load is examined. Simulation result indicates that the proposed control strategy improved the power factor and reducing THD compared to the conventional control method.

A Multi Pole Induction Motor Drive With Reduced Torque Ripple Using A Fault Tolerant Dual Multi Level Inverter Configuration

Ajith Ram, Siva, V.Ponselvan

Abstract:
Multilevel inverters are gaining more attention in ac drive application due to their many attractive features. In the case of conventional neutral-point-clamped (NPC) or flying capacitor multilevel inverter configurations, active switches are connected in series to produce multilevel output voltage waveform. Therefore, if any one switch fails, the entire configuration has to be shut down; this will reduce the reliability of the system. A dual three-level inverter configuration for induction motor drive is proposed in this paper to improve reliability of the system. This topology is developed by feeding four-pole induction motor stator winding with four conventional two-level inverter modules. A level-shifted carrier-based third harmonic injection pulsewidth-modulation technique is used to produce the gating signals for the proposed configuration. By providing proper phase shift between carrier waves, multilevel

voltage waveform is produced across the total motor phase winding, and first center band harmonics are also canceled. Thereby, the torque ripple will be considerably reduced compared with conventional NPC five-level inverter-driven induction motor drive. Finite-element analysis (FEA) is used to estimate the torque ripple when induction motor is supplied by the proposed configuration and conventional five-level NPC inverter configuration to show the effectiveness of the proposed converter. The proposed configuration is simulated using MATLAB/Simulink and experimentally verified using a laboratory prototype with a 5-hp four-pole induction motor drive.

High Boost Ratio Hybrid Transformer Dc-Dc Converterfor Photo Voltaic Module Application

Mrs.Hema , Mr.M.Jibin

Abstract:
This paper presents a nonisolated, high boost ratio hybrid transformer dc–dc converter with applications for low-voltage renewable energy sources. The proposed converter utilizes a hybrid transformer to transfer the inductive and capacitive energy simultaneously, achieving a high boost ratio with a smaller sized magnetic component. As a result of incorporating the resonant operation mode into the traditional high boost ratio pulsewidth modulation converter, the turn-off loss of the switch is reduced, increasing the efficiency of the converter under all load conditions. The input current ripple and conduction losses are also reduced because of the hybrid linear-sinusoidal input current waveforms. The voltage stresses on the active switch and diodes are maintained at a low level and are independent of the changing input voltage over a wide range as a result of the resonant capacitor transferring energy to the output of the converter. The effectiveness of the proposed converter was experimentally verified using a 220-W prototype circuit. Utilizing an input voltage ranging from 20 to 45 V and a load range of 30–220 W, the experimental results show system of efficiencies greater than 96% with a peak efficiency of 97.4% at 35-V input, 160-W output. Due to the high system efficiency and the ability to operate with a wide variable input voltage, the proposed converter is an attractive design for alternative low dc voltage energy sources, such as solar photovoltaic modules and fuel cells.

Design of dual phase shift controlled full bridge converter

Abinaya G , M.Jibin

Abstract The phase shifted full bridge (PSFB) converter is used for DC-DC conversion in various applications, for example in telecom systems to convert a high voltage bus to an intermediate distribution voltage, typically closer to 48V. PSFB stage provides voltage translation as well as isolation from the line voltage, since this topology includes a transformer. This document presents the implementation details of a digitally controlled PSFB system implemented on the HVPSFB kit from Texas Instruments. This kit converts a 400V DC input to a regulated 12V DC output and is rated for operations up to 600W. Both peak current mode control (PCMC) and voltage mode control (VMC) implementations are described. These

highly integrated microcontroller based realizations feature adaptive zero voltage switching (ZVS) and various synchronous rectification schemes, which are discussed here. Details for generating complex gate drive waveforms, required by these control schemes, and intelligent timing control, to optimize system performance under changing operating conditions, are provided. A step by step guide to run and get familiar with the HVPSFB project is also included. A constant high system efficiency above 10% rated load, novel PCMC waveform generation based on onchip hardware mechanisms, and simple system implementation are the highlights of this solution.

Hybrid Transformer Dc-Dc Converter With High Boost Ratio For Photo Voltaic Module Application

R Ashel V.Ponselvan

Abstract:
This paper presents a nonisolated, high boost ratio hybrid transformer dc–dc converter with applications for low-voltage renewable energy sources. The proposed converter utilizes a hybrid transformer to transfer the inductive and capacitive energy simultaneously, achieving a high boost ratio with a smaller sized magnetic component. As a result of incorporating the resonant operation mode into the traditional high boost ratio pulsewidth modulation converter, the turn-off loss of the switch is reduced, increasing the efficiency of the converter under all load conditions. The input current ripple and conduction losses are also reduced because of the hybrid linear-sinusoidal input current waveforms. The voltage stresses on the active switch and diodes are maintained at a low level and are independent of the changing input voltage over a wide range as a result of the resonant capacitor transferring energy to the output of the converter. The effectiveness of the proposed converter was experimentally verified using a 220-W prototype circuit. Utilizing an input voltage ranging from 20 to 45 V and a load range of 30–220 W, the experimental results show system of efficiencies greater than 96% with a peak efficiency of 97.4% at 35-V input, 160-W output. Due to the high system efficiency and the ability to operate with a wide variable input voltage, the proposed converter is an attractive design for alternative low dc voltage energy sources, such as solar photovoltaic modules and fuel cells.

Design Of Solar Powered Agriculture Pump Using New Configuration Of Dual Output Buck Boost Converter.

ABINAYA G, M.JIBIN

Abstract

This paper proposed a new structure of single switch dual output Zeta derived DC-to-DC converter for an efficient harvesting of photovoltaic (PV) power for a 4-phase switched reluctance motor (SRM) driven agriculture pump. The system is essentially developed to minimise both cost and complexity, while synchronously guaranteeing optimal operation of the PV array. The proposed converter is derived from a hybrid of a 'Zeta' and Landsman converters and so it contains all the benefits of both converters including balanced outputs. Due

to an identical instantaneous duty cycle, the switching node is shared by both Zeta and Landsman converters. The proposed converter offers continuous power to drive, a low ripple in output current, and balanced dual output supply. The PV power optimisation and to deliver smooth start of SRM, are the two major objectives of proposed DC-to-DC converter. A new maximum power point tracking (MPPT) technique is also used in the system to optimise the performance of PV array. Moreover, the proposed MPPT control has an additional advantage of regulating the flow rate of water pumping by adjusting the duty cycle of DC-to-DC converter. The motor speed is smoothly regulated through the variable DC link voltage of a mid-point converter.

Hybrid Transformer Dc-Dc Converter With High Boost Ratio For Photo Voltaic Module Application

Sarikavani M, R Sutha,V.Ponselvan

Abstract:
This paper presents a nonisolated, high boost ratio hybrid transformer dc–dc converter with applications for low-voltage renewable energy sources. The proposed converter utilizes a hybrid transformer to transfer the inductive and capacitive energy simultaneously, achieving a high boost ratio with a smaller sized magnetic component. As a result of incorporating the resonant operation mode into the traditional high boost ratio pulsewidth modulation converter, the turn-off loss of the switch is reduced, increasing the efficiency of the converter under all load conditions. The input current ripple and conduction losses are also reduced because of the hybrid linear-sinusoidal input current waveforms. The voltage stresses on the active switch and diodes are maintained at a low level and are independent of the changing input voltage over a wide range as a result of the resonant capacitor transferring energy to the output of the converter. The effectiveness of the proposed converter was experimentally verified using a 220-W prototype circuit. Utilizing an input voltage ranging from 20 to 45 V and a load range of 30–220 W, the experimental results show system of efficiencies greater than 96% with a peak efficiency of 97.4% at 35-V input, 160-W output. Due to the high system efficiency and the ability to operate with a wide variable input voltage, the proposed converter is an attractive design for alternative low dc voltage energy sources, such as solar photovoltaic modules and fuel cells.

Design of solar powered agriculture pump using new configuration of dual output buck boost converter

Jancy Vinu L, Saranya P

Abstract

This paper proposed a new structure of single switch dual output Zeta derived DC-to-DC converter for an efficient harvesting of photovoltaic (PV) power for a 4-phase switched reluctance motor (SRM) driven agriculture pump. The system is essentially developed to minimise both cost and complexity, while synchronously guaranteeing optimal operation of

the PV array. The proposed converter is derived from a hybrid of a 'Zeta' and Landsman converters and so it contains all the benefits of both converters including balanced outputs. Due to an identical instantaneous duty cycle, the switching node is shared by both Zeta and Landsman converters. The proposed converter offers continuous power to drive, a low ripple in output current, and balanced dual output supply. The PV power optimisation and to deliver smooth start of SRM, are the two major objectives of proposed DC-to-DC converter. A new maximum power point tracking (MPPT) technique is also used in the system to optimise the performance of PV array. Moreover, the proposed MPPT control has an additional advantage of regulating the flow rate of water pumping by adjusting the duty cycle of DC-to-DC converter. The motor speed is smoothly regulated through the variable DC link voltage of a mid-point converter.

Design of a solar-powered agriculture pump with a new dual output buck boost converter configuration.

D Pravin Gino, R Sakthi Ramana S Gopakumar

Abstract:

This paper proposed a new structure of single switch dual output Zeta derived DC-to-DC converter for an efficient harvesting of photovoltaic (PV) power for a 4-phase switched reluctance motor (SRM) driven agriculture pump. The system is essentially developed to minimise both cost and complexity, while synchronously guaranteeing optimal operation of the PV array. The proposed converter is derived from a hybrid of a 'Zeta' and Landsman converters and so it contains all the benefits of both converters including balanced outputs. Due to an identical instantaneous duty cycle, the switching node is shared by both Zeta and Landsman converters. The proposed converter offers continuous power to drive, a low ripple in output current, and balanced dual output supply. The PV power optimisation and to deliver smooth start of SRM, are the two major objectives of proposed DC-to-DC converter. A new maximum power point tracking (MPPT) technique is also used in the system to optimise the performance of PV array. Moreover, the proposed MPPT control has an additional advantage of regulating the flow rate of water pumping by adjusting the duty cycle of DC-to-DC converter. The motor speed is smoothly regulated through the variable DC link voltage of a mid-point converter.

Android App Controlled Robotic Arm

M Ajin, G Murugan

Abstract

With the advancement of technology and innovation at its peak, fabrication of systems and designs akin to human skills are increasingly integrated into working task to cater the rapid surge of human needs. Such innovations are made with the hopes of making people's live easier. This paper concentrates on the development of a robotic arm which is functional to do a pick and place operation and controlled by using a mobile application via Android phone.

Designed to work on predetermined commands, the robot arm has the ability to move in a 4 axis direction; upward, downward, left and right direction at a specified angle with 6 servo motors and according to the mobile app specifications. Designed and realized, the robotic arm control is through the use of a mobile application, via Bluetooth module, that has been programmed through Arduino UNO microcontroller.

Robotic Arm Controlled By Android App

M Navin Kumar, R S Breeze, G Murugan

Abstract and Figures

In this paper we present the design of a three joint robotic arm printed out in polyethylene terephthalate glycol material which provide durability and has good chemical resistance. To move the arm, we used four servomotors for a complex orientation in horizontal and vertical plane. At the tip of the robotic arm a 5V vacuum pump was mounted to handle organic solar cells printed out on indium tin oxide treated glass sheets with a dimension of 25/24/1mm. For an easy and precise control of the robotic arm an Android application was developed with an intuitive user-friendly interface. The communication between the robotic arm and the Android App is established through Bluetooth protocol. The control of the robotic arm is executed by a custom program on an ATmega328 microcontroller.

Realtime detection system of electrical disturbances in remote communication stations and smart grid

D Jenifer, S Renuka Devi, G K Jabash Samuel

Abstract:

This article proposes the development of a disturbance detection system in the electrical network that operates in real time. The system is employed in RCS (remote communication stations), registering electrical disturbances for network monitoring. Notifications are delivered to the power distribution company autonomously, promoting integration of remote communication stations with the concept of Smart Grid. The developed system differs from others by using a method based on euclidean distance for the disturbances detection. Moreover, a web interface is offered for monitoring via Ethernet. Our system uses an Arduino platform for signal processing, sensors to obtain data and Ethernet and GSM network interfaces for communication. Using diverse communication technologies promotes redundancy in communication and notification to the power distribution company. The system was able to detect efficiently most of assessed voltage disturbances. It was also able to send monitoring events using the private network of the RCS and also employing SMS notification messages.

Electrical Disturbances Detection System In Remote Communication Stations And Smart Grid

santhiya, S Thanusha, G K Jabash Samuel

Abstract
This article proposes the development of a disturbance detection system in the electrical network that operates in real time. The system is employed in RCS (remote communication stations), registering electrical disturbances for network monitoring. Notifications are delivered to the power distribution company autonomously, promoting integration of remote communication stations with the concept of Smart Grid. The developed system differs from others by using a method based on euclidean distance for the disturbances detection. Moreover, a web interface is offered for monitoring via Ethernet. Our system uses an Arduino platform for signal processing, sensors to obtain data and Ethernet and GSM network interfaces for communication. Using diverse communication technologies promotes redundancy in communication and notification to the power distribution company. The system was able to detect efficiently most of assessed voltage disturbances. It was also able to send monitoring events using the private network of the RCS and also employing SMS notification message

Hybrid Energy Storage System Integrate Pv Wind Battery For Industrial Applications

Nadarajan, G Murugan

Abstract and Figures
In island countries, microgrid systems have the ability to provide reliable and improved power quality especially in the vast country with low population density in remote regions. There are two major types of smart grid design in the absence of central grid, namely DC microgrid and AC microgrid. When microgrids are enabled with renewable energy sources, energy storage units increase the reliability in power supply for the load demand on consumer end. The optimized means of extracting power from renewable energy resources like wind, solar, and fuel cell is difficult in islanding mode of operation. Due to occurrence of power imbalance, energy storage units are required which support the energy requirement when power generation cannot meet the load demand. A microgrid is controlled by a supervisory controller that decides which energy storage units are connected to satisfy the load demand. Though the task is simple, appropriate control strategies are required by the microgrid to cope up with disturbances such as sudden changes in environmental and load conditions. An energy storage unit should be designed to fulfill the requirement of fast and dynamic transition of power consumed by loads connected with microgrid. In AC microgrid, the presence of local energy sources and the ability to regulate voltage and frequency can alleviate the burden for conventional generating unit. In DC microgrid, such a problem does not exist; however, the issue of voltage handling is needed to be dealt with. This chapter deals with the integration of energy storage system (ESS) with

DC and/or AC microgrid and related energy management control algorithms. It also addresses the research challenges and solutions towards smooth operational behavior of ESS by integrating microgrid enabled with renewable energy sources. The detailed design specifications of ESS for 500 kW microgrid enabled with solar-wind hybrid renewable energy system (RES) is discussed. Validation through simulation studies is performed to understand the operation of effective and efficient integration of ESS with microgrid operating under islanded conditions.

Behavior Based Fraud Detection In Online Payment Services

Mr.G.K.Jabash Samuel , Rathish M

Abstract—The vigorous development of e-commerce breeds cybercrime. Online payment fraud detection, a challenge faced by online service, plays an important role in rapidly evolving e-commerce. Behavior-based methods are recognized as a promising method for online payment fraud detection. However, it is a big challenge to build high-resolution behavioral models by using low-quality behavioral data. In this work, we mainly address this problem from data enhancement for behavioral modeling. We extract fine-grained co-occurrence relationships of transactional attributes by using a knowledge graph. Furthermore, we adopt the heterogeneous network embedding to learn and improve representing comprehensive relationships. Particularly, we explore customized network embedding schemes for different types of behavioral models, such as the population-level models, individual-level models, and generalized-agent-based models. The performance gain of our method is validated by the experiments over the real dataset from a commercial bank. It can help representative behavioral models improve significantly the performance of online banking payment fraud detection. To the best of our knowledge, this is the first work to realize data enhancement for diversified behavior models by implementing network embedding algorithms on attribute-level co-occurrence relationships. Index Terms—Online payment services, fraud detection, network embedding, user behavioral modelling

Ls-Rq_A Lightweight And Forward Secure Range Query On Geographically Encrypted Data

Rexy S , Mr.Ponselvan. V

Abstract:
In the era of cloud computing, to achieve convenient location-based service (LBS), consumers such as users, companies, and organizations prefer subcontracting massive geographical data to public clouds after encryption for privacy and security. However, numerous harmful cyber-attacks happen on those public clouds in an unpredicted and hourly manner. To alleviate those concerns, various secure query schemes on the encrypted data have been proposed in the literature. As a fundamental query of LBSs, forward-secure range query has not been well

investigated. To address this issue, we propose a lightweight and forward-secure range query (LS-RQ) on geographically encrypted data, which soundly balances between security and efficiency. Promisingly, we design an index mechanism to manage geographical data on the public clouds, while not compromising the privacy of data. Moreover, our LS-RQ schemes provide a convenient approach to range query on geographically encrypted data on-the-fly. We also rigorously prove that LS-RQ is forward-secure. Finally, extensive experimental studies are performed on both real and synthetic datasets. By observation, our LS-RQ schemes are highly efficient in realistic environments. Particularly, on encrypted datasets with about 1000000 geographical data, our solution to secure range query takes strictly less than a second.

Passive Ip Traceback: Disclosing The Locations Of Ip Spoofers From Path Backscatter

Sakminao Siro , Mr.Gopakumar. S

Abstract:
It is long known attackers may use forged source IP address to conceal their real locations. To capture the spoofers, a number of IP traceback mechanisms have been proposed. However, due to the challenges of deployment, there has been not a widely adopted IP traceback solution, at least at the Internet level. As a result, the mist on the locations of spoofers has never been dissipated till now. This paper proposes passive IP traceback (PIT) that bypasses the deployment difficulties of IP traceback techniques. PIT investigates Internet Control Message Protocol error messages (named path backscatter) triggered by spoofing traffic, and tracks the spoofers based on public available information (e.g., topology). In this way, PIT can find the spoofers without any deployment requirement. This paper illustrates the causes, collection, and the statistical results on path backscatter, demonstrates the processes and effectiveness of PIT, and shows the captured locations of spoofers through applying PIT on the path backscatter data set. These results can help further reveal IP spoofing, which has been studied for long but never well understood. Though PIT cannot work in all the spoofing attacks, it may be the most useful mechanism to trace spoofers before an Internet-level traceback system has been deployed in real.

Inference Attack Twitter Users Using Public Click Analytice And Twitter Meta Data

Sam Jerin V , Mr.Gopakumar. S

Abstract:
Twitter is a popular online social network service for sharing short messages (tweets) among friends. Its users frequently use URL shortening services that provide (i) a short alias of a long URL for sharing it via tweets and (ii) public click analytics of shortened URLs. The public click analytics is provided in an aggregated form to preserve the privacy of individual users. In this paper, we propose practical attack techniques inferring who clicks which shortened URLs on Twitter using the combination of public information: Twitter metadata and public click analytics. Unlike the conventional browser history stealing attacks, our attacks only demand

publicly available information provided by Twitter and URL shortening services. Evaluation results show that our attack can compromise Twitter users' privacy with high accuracy.

Type-2 Fuzzy Logic Based Cluster Head Election For Wireless Sensor Network

Shalu L , Mrs.Thangasakthi.T

Abstract:
The network scalability and energy performance have great importance in wireless sensor networks (WSNs). WSN consists of a vast number of nodes with small memory and battery capacity, which makes an energy-efficient design of WSNs very essential. Since the entire network's life depends on the sensor nodes, effective energy usage, clustering has been proved one of the best approaches to enhance energy efficiency and network lifetime. In this paper, we design a type 2 fuzzy logic based clustering scheme in a multi-hop WSN to reduce energy consumption and improve network scalability. In this clustering scheme, we propose a Cluster head (CH) selection strategy where a sensor node is elected as a CH based on type 2 fuzzy logic inputs. To balance the load of CHs we also select their radius size based on the fuzzy logic inputs. We compare our proposed scheme with the well-known TTDPF and CHCCF schemes. The simulation results show that our proposed schemes outperform the TTDFP and CHCCF schemes in terms of network lifetime and other metrics.

A Mobile Phone System To Find Crosswalks And Accessible Pedestrians Signals For Visually Impaired

Sreeja M , Mr.Jeyakumar. P

Abstract

Urban intersections are the most dangerous parts of a blind or visually impaired pedestrian's travel. A prerequisite for safely crossing an intersection is entering the crosswalk in the right direction and avoiding the danger of straying outside the crosswalk. This paper presents a proof of concept system that seeks to provide such alignment information. The system consists of a standard mobile phone with built-in camera that uses computer vision algorithms to detect any crosswalk visible in the camera's field of view; audio feedback from the phone then helps the user align him/herself to it. Our prototype implementation on a Nokia mobile phone runs in about one second per image, and is intended for eventual use in a mobile phone system that will aid blind and visually impaired pedestrians in navigating traffic intersections.

Keywords: Blindness, visual impairments, navigation, computer vision, cell phone, mobile phone, camera phone

Credit Card Fraud Detection Based On Convolutional Neural Network

Udaya Subinesh P , Mr.G.K.Jabash Samuel

Abstract

Frauds in credit card transactions are common today as most of us are using the credit card payment methods more frequently. This is due to the advancement of Technology and increase in online transaction resulting in frauds causing huge financial loss. Therefore, there is need for effective methods to reduce the loss. In addition, fraudsters find ways to steal the credit card information of the user by sending fake SMS and calls, also through masquerading attack, phishing attack and so on. This paper aims in using the multiple algorithms of Machine learning such as support vector machine (SVM), k-nearest neighbor (Knn) and artificial neural network (ANN) in predicting the occurrence of the fraud. Further, we conduct a differentiation of the accomplished supervised machine learning and deep learning techniques to differentiate between fraud and non-fraud transactions.

Sentiment Aspect Added Automated Phrase Mining From Massive Text Corpora

Umabharathi S , Mr.Murugan. G

Abstract and Figures

As one of the fundamental tasks in text analysis, phrase mining aims at extracting quality phrases from a text corpus. Phrase mining is important in various tasks including automatic term recognition, document indexing, keyphrase extraction, and topic modeling. Most existing methods rely on complex, trained linguistic analyzers, and thus likely have unsatisfactory performance on text corpora of new domains and genres without extra but expensive adaption. Recently, a few data-driven methods have been developed successfully for extraction of phrases from massive domain-specific text. However, none of the state-of-the-art models is fully automated because they require human experts for designing rules or labeling phrases. In this paper, we propose a novel framework for automated phrase mining, AutoPhrase, which can achieve high performance with minimal human effort. Two new techniques have been developed: (1) by leveraging knowledge bases, a robust positive-only distant training method can avoid extra human labeling effort; and (2) when the part-of-speech (POS) tagger is available, a POS-guided phrasal segmentation model can better understand the syntactic information for the particular language and further enhance the performance by considering the context. Note that, AutoPhrase can support any language as long as a general knowledge base (e.g., Wikipedia) in that language are available, while benefiting from, but not requiring, a POS tagger. Compared to the state-of-the-art methods, the new method has shown significant improvements on effectiveness on five real-world datasets in different domains and languages.

An Overview Of Internet Of Things (Iot) And Data Analytics In Agriculture: Benefits And Challenges

Mr.Basker .C , Arul Nitha R

Abstract:
The surge in global population is compelling a shift toward smart agriculture practices. This coupled with the diminishing natural resources, limited availability of arable land, increase in unpredictable weather conditions makes food security a major concern for most countries. As a result, the use of Internet of Things (IoT) and data analytics (DA) are employed to enhance the operational efficiency and productivity in the agriculture sector. There is a paradigm shift from use of wireless sensor network (WSN) as a major driver of smart agriculture to the use of IoT and DA. The IoT integrates several existing technologies, such as WSN, radio frequency identification, cloud computing, middleware systems, and end-user applications. In this paper, several benefits and challenges of IoT have been identified. We present the IoT ecosystem and how the combination of IoT and DA is enabling smart agriculture. Furthermore, we provide future trends and opportunities which are categorized into technological innovations, application scenarios, business, and marketability.

Networks Minimizing Influence Of Rumors On Social

Pratheep M.K Mr.Murugan. G

Abstract:
Online social networks, such as Facebook, Twitter, and Wechat have become major social tools. The users can not only keep in touch with family and friends, but also send and share the instant information. However, in some practical scenarios, we need to take effective measures to control the negative information spreading, e.g., rumors spread over the networks. In this paper, we first propose the minimizing influence of rumors (MIR) problem, i.e., selecting a blocker set B with k nodes such that the users' total activation probability by rumor source set S is minimized. Then, we employ the classical independent cascade (IC) model as an information diffusion model. Based on the IC model, we prove that the objective function is monotone decreasing and non-submodular. To address the MIR problem effectively, we propose a two-stages method generating candidate set and selecting blockers for the general networks. Furthermore, we also study the MIR problem on the tree network and propose a dynamic programming guaranteeing the optimal solution. Finally, we evaluate proposed algorithms by simulations on synthetic and real-life social networks, respectively. Experimental results show our algorithms are superior to the comparative heuristic approaches, such as out-degree, betweenness centrality, and PageRank.

Using Blam Reduction Of Ddos Attack On Iot Devices

Mr.Gopakumar. S , Pratheep M.K

Abstract—Information-Centric Networking (ICN) provides great potential to promote the development of the Internet of Things (IoT) due to its multicast nature and mobility support. However, the stateful forwarding peculiarity introduces new varietal attacks named Interest Flooding Attacks (IFA), which is stealthy but destructive for the resource-limited IoT devices. In this paper, we propose a lightweight BLoom-filter based Attack Mitigating (BLAM) mechanism to reduce the detecting memory cost, while guaranteeing both the detecting accuracy and delay. Specifically, each IoT node employs a small Bloom filter to check attack behaviors instead of the traditional memoryconsuming operations, i.e., recording malicious requests. Bloom filter values by hashing the published data names with a set of hash functions, are encapsulated and distributed via a new message named Ba-NACK. Based on this design, two specific schemes are further proposed for the attack detecting and Bloom filter updating. We formulate the memory cost minimum problem and theoretically analyze that BLAM can reduce the memory cost. We also implement BLAM in a realistic network testbed to evaluate its performance. The results show that BLAM reduces the memory cost by 78.6%, and reduces the delay from millisecond to microsecond with slight sacrifice of the accuracy by 0.4% compared with other state-of-the-art mechanisms.

Prevention Of Denial- Of- Service Flooding Attacks With Dynamic Path Identifiers

Ramji C , Mr.Padma Kumar.R

Abstract:
In recent years, there are increasing interests in using path identifiers (PIDs) as inter-domain routing objects. However, the PIDs used in existing approaches are static, which makes it easy for attackers to launch the distributed denial-ofservice (DDoS) flooding attacks. To address this issue, in this paper, we present the design, implementation, and evaluation of dynamic PID (D-PID), a framework that uses PIDs negotiated between the neighboring domains as inter-domain routing objects. In D-PID, the PID of an inter-domain path connecting the two domains is kept secret and changes dynamically. We describe in detail how neighboring domains negotiate PIDs and how to maintain ongoing communications when PIDs change. We build a 42-node prototype comprised of six domains to verify D-PID's feasibility and conduct extensive simulations to evaluate its effectiveness and cost. The results from both simulations and experiments show that D-PID can effectively prevent DDoS attacks.

The Road Accident Analyzer: A Tool To Identify High-Risk Road Location Using Machine Learning

Ramji C , Mr.Padma Kumar.R

Abstract

In this article, a traffic accident analysis tool, called the Road Accident Analyzer, is being developed to visualize traffic safety in any specific region. First, a literature review is conducted, which results in a well-structured overview of the existing methodologies from over the world to identify high-risk road locations. In most studies concerning the identification of high-risk locations two important phases can be distinguished. In the first phase a safety indicator has to be calculated. Subsequently it is investigated whether the value of this safety indicator significantly exceeds a predetermined threshold value in the second phase. After the theoretical discussion of these two phases, a new geographic information system (GIS)-based tool is being developed, with which high-risk road locations can be identified and geographically visualized. In a case study of the E313 highway in Flanders three accident indicators are calculated: the accident density, the accident risk, and the expected number of accidents on the basis of an accident model (empirical Bayes approach). Thereafter, priority sites will be determined for each approach. Afterwards the advantages and disadvantages of each methodology are critically discussed.

Minimizing Influence Of Rumors On Social Networks

Sreeja M , Mr.Padma Kumar.R

Abstract:
Online social networks, such as Facebook, Twitter, and Wechat have become major social tools. The users can not only keep in touch with family and friends, but also send and share the instant information. However, in some practical scenarios, we need to take effective measures to control the negative information spreading, e.g., rumors spread over the networks. In this paper, we first propose the minimizing influence of rumors (MIR) problem, i.e., selecting a blocker set B with k nodes such that the users' total activation probability by rumor source set S is minimized. Then, we employ the classical independent cascade (IC) model as an information diffusion model. Based on the IC model, we prove that the objective function is monotone decreasing and non-submodular. To address the MIR problem effectively, we propose a two-stages method generating candidate set and selecting blockers for the general networks. Furthermore, we also study the MIR problem on the tree network and propose a dynamic programming guaranteeing the optimal solution. Finally, we evaluate proposed algorithms by simulations on synthetic and real-life social networks, respectively. Experimental results show our algorithms are superior to the comparative heuristic approaches, such as out-degree, betweenness centrality, and PageRank.

Implementing Meta Heuristic Algorithms In Automatic Question Tagging

Sree Sankar B.G ,V.Ponselvan

Abstract

Tagging is an increasingly important task in natural language processing domains. As there are many natural language processing tasks which can be improved by applying disambiguation to the text, fast and high quality tagging algorithms are a crucial task in information retrieval and question answering. Tagging aims to assigning to each word of a text its correct tag according to the context in which the word is used. Part Of Speech (POS) tagging is a difficult problem by itself, since many words has a number of possible tags associated to it. In this paper we present a novel algorithm that deals with POS-tagging problem based on Harmony Search (HS) optimization method. This paper analyzes the relative advantages of HS metaheuristic approache to the well-known natural language processing problem of POS-tagging. In the experiments we conducted, we applied the proposed algorithm on linguistic corpora and compared the results obtained against other optimization methods such as genetic and simulated annealing algorithms. Experimental results reveal that the proposed algorithm provides more accurate results compared to the other algorithms.