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Proceedings of
"Conference on Recent Advances in Biomaterials Dec 17-18 '10"
Held at Saveetha School of Engineering, Saveetha University, Thandalam, Chennai-602 105, Tamilnadu, India

SCOPE OF THE CONFERENCE

"The conference will provide a platform for discussing current advancements and future trends in biomaterials for medical and pharmaceutical applications. Through the synergistic approach of applied chemistry and physics, material science, electronics, mechanical engineering, biochemistry and medicine, this Conference on biomaterials includes how the deeper insight into biological events and its interplay with nanotechnology may support the development of a generation of novel materials, micro-nano-devices and molecular level approaches suited to solve relevant biomedical problems both for therapy and diagnostics. The conference will provide an excellent opportunity to meet and forge collaboration with large number of experts with diverse specializations including engineering, basic sciences, medical and dental professionals, etc. For the research scholars and students, CRAB 2010 will be an eye opener and an excellent opportunity to meet experts from various institutions in India and abroad."

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Ph:9282500599, Ph:9846152346, Email ID: principal.sse@saveetha.com

THEME 10

EMBEDDED ELECTRONICS IN MEDICAL APPLICATIONS

Abstract id:5

IMPLEMENTATION OF CLL RESONANT DC-TO-DC CONVERTER FOR STAND ALONE WIND ENERGY SYSTEM

M.Annamalai¹, M. Vijaya Kumar²

¹Department of Electrical & Electronics Engineering, Sathyabama University, Chennai, India, Email: annamalaimp@gmail.com

²Department of Electrical & Electronics Engineering, JNTU, AP, India, Email: mvk_2004@rediffmail.com

This paper deals with simulation and experimentation of DC-to-DC converter for stand-alone wind energy system. The CLL resonant inverter system and DC- to- DC converter system are simulated using MATLAB simulink power system blocks. This converter has advantages like reduced transformer size, reduced filter size and current source characteristics. The hardware is tested in the laboratory. The simulation results and experimental results are presented.

Keywords: Converter, Resonant Inverter, DC to DC Converter, Mat lab

Abstract id:6

DESIGN AND SIMULATION OF DC-DC BOOST CONVERTER USING HYBRID CONTROL ALGORITHM

S.M.Balaganesan

Lecturer, EEE -PG dept., Sri Ramakrishna Engineering College, Coimbatore, India, Email: bala_smb@rediffmail.com

A dc-to-dc converter is used to change the dc voltage from one level to another. In this case, the dc input voltage is fixed and the level of the dc output voltage depends upon the converter's topology. In this project using dc-dc boost converter topology, the dc output voltage can be higher than the input voltage by using hybrid control algorithm, considered as an interacting combination of two hybrid automations. Since the advent of diodes, the techniques have been developed to obtain the dc voltage from the time varying sinusoidal (ac) supply. The half wave rectifier and the bridge rectifier are used to obtain dc voltage from a single-phase time-varying source. To control the ripple of the rectified output voltage, large capacitor filters are used. These circuits now referred to as the linear regulators, operate at the frequency of the ac voltage, which is usually 50 Hz.

Some of the major problems associated with the linear regulator is its size and weight of its components such as the transformer. The voltage regulator element in these circuits has a comparatively high voltage across its terminals and dissipates large amounts of power, which results in low efficiency. For this very reason, the use of linear regulators is now limited to low power applications.

As the power semiconductor devices became more reliable and efficient in their operation, the switched mode power supplies came into existence. In the design of these power supplies, the semiconductor devices are either switched on or switched off. Due to the low voltage drop across the semiconductor device when it is on, its power consumption is low. For this reason, the switched mode power supplies are highly efficient. Since the switching action, which simply means to turn a power semiconductor device either on or off, is usually done at high frequencies, the relative size and

weight of the components needed for its design is comparatively small. In this thesis, our aim is to obtain a dc output voltage, which may be higher from a fixed dc input voltage by using a hybrid control algorithm.

Keywords: Semiconductor device, dc converter, hybrid control algorithm

Abstract id:7

TCP/IP IMPLEMENTATION IN EMBEDDED SYSTEMS

D.Bhanupriya,

Department of Electronics and Communication Engineering, Vels Srinivasa College of Engineering & Technology, Chennai, Tamil Nadu, India

This report is concerned with the application of TCP/IP in embedded systems. The TCP/IP is used for transferring data between computers via the internet. The process of transferring the message involves a number of layered communication protocols. TCP/IP refers to entire suite of data communications protocols. PIC microcontroller is used to send and receive TCP/IP communication data. Flowcode is a high level language used for microcontroller programming. TCP/IP protocols are implemented by using Flowcode in this project. Complex PIC based robotics and control systems can be designed by drawing flowchart without significant programming skills. The report presents program design and explanation which can be well understood without any programming language experience. The purpose of the project is to design laboratory tool to aid learning of the basic OSI layers in computer networking and application of various data communication protocols on the embedded systems.

Keywords: Embedded systems, OSI layers, data communication protocols

Abstract id:11

REDUCTION OF POWER CONSUMPTION IN FAULT TOLERANT BUSES USING DUAL RAIL CODE

A.Gangadhar ,Ch, Manohar

Ece Dept, K.I.E.T, Korangi, Kakinada-533003

Very deep sub micrometer technology is becoming more sensitive and lead to errors caused by power supply variations, noise in bus lines, crosstalk, delay variations and stuck at faults. Error-correcting codes (ECCs) can be used to provide signal transmission with the necessary data integrity. In this paper, the impact of ECCs to encode the information on a very deep sub micrometer bus on bus power consumption is analyzed. To fulfill this purpose, encoding the source of data and transmitted on to buses after that decoding circuitry are accounted for. After a detailed analysis of power dissipation in deep sub micrometer fault-tolerant buses using Hamming single ECCs, it is shown that no power saving is possible by choosing among different Hamming codes. A novel scheme, called Dual Rail, is then proposed. In this paper total power consumption for different FPGA devices is also analyzed.

Keywords: Error-correcting codes, Hamming codes, FPGA, power consumption

Abstract id:14

SIGNALING COST ANALYSIS OF MOBILITY MANAGEMENT ENTITIES FOR SIGMA

B.Jaiganesh¹, Dr.R.Ramachandran²

¹Research Scholar, ECE Department, Sathyabama University, Chennai, Email Id:jaiganesh.price@gmail.com

²Principal, Sri Venkateswara College of Engineering, Sriperumbudur, Chennai, Email Id:rampran@yahoo.com

To facilitate mobile computing, mobility protocols have been proposed and mobility management involves signaling costs. Widespread use of IP-enabled mobile devices have resulted in increase in number of mobile users in the network and the signaling cost on underlying mobility entities have increased significantly, which will result in performance degradation of the mobility protocols. However, there has been no comprehensive cost analysis of mobility protocol entities that considers all possible costs for mobility management. In this paper, we have developed analytical models to estimate total costs of mobility management entities of SIGMA, an IP-diversity based seamless handover protocol. We have presented numerical results to demonstrate the impact of increased of network size, mobility rate, traffic rate and data volume on these costs. Our results show that a significant amount of resources are required by the mobility entities for transmission, processing of various signaling messages, as well as searching location database. Our cost analysis will thus help network engineers estimate actual resource requirements of the network in future design.

KeyWords: Mobility Protocols, Analytical Modeling, Signaling cost, Seamless handover

Abstract id:15

MICROCONTROLLER BASED VEHICLE-TO DRIVER/ENVIRONMENT INTERACTION SYSTEM FOR MOTORCYCLES

J.Jayashree

Gkm College Of Engg And Tech

This thesis concerns the definition and the implementation of an add-on interaction system for motorcycles. The system consists of a vehicle-to-driver and a vehicle-to-environment communication mechanism along with accident information and alcohol detection mechanisms. The communications are based on microcontroller 8051 to wireless ZigBee. The system is focused to increase the safety level of a motorcycle and it is constituted by a vehicle, a compact embedded electronic unit implementing a microcontroller-to-Zigbee gateway, voice recognition unit and a helmet equipped with wireless speaker. The driver-to-vehicle interaction is based on an audio interaction located at helmet level.

Key Words: motor cycles, alcohol detection mechanisms, ZigBee, microcontroller

Abstract id :20

OPTIMIZING PERFORMANCE AND POWER MANAGEMENT IN EMBEDDED SYSTEMS

S. Karunakaran, R. Rani Hemamalini

Saveetha Engg. College, St. Peters University

Low power processors are the key to the realization of portable electronic devices, in which power consumption is an important factor. The power management for microprocessors can be done over the whole processor, or in specific areas. With dynamic voltage scaling and dynamic frequency scaling, the CPU core voltage, clock rate, or both, can be altered to decrease power consumption at the price of potentially lower performance.

For years, embedded applications have relied on custom hardware functions to accelerate common algorithms such as graphics or signal processing to accomplish more work per clock cycle. While this approach increases system performance, it does not reduce the system clock or dynamic power consumption.

Clock gating is one of the power-saving techniques used on many synchronous circuits. In this method the clock signal is prevented from reaching the various modules of the processor. The absence of the clock signal prevents any register and/or flip-flop from changing their values and thus no switching activity takes place in those circuits. Since, in CMOS circuits, most of the power dissipation results from switching activity, clock gating greatly reduces the overall power consumption.

So a Special Modular ALU design is the best solution for optimizing performance with reduced power dissipation. In this design Clock gating is mostly concentrated on the Adder, Multiplier, ALU, and ALU Control Unit. Each of the operations supported by the ALU has to be performed by a different sub-module inside the ALU. Each of the modules of the ALU is preceded by a set of transmission gates that controls all the inputs to that module. When a module is needed, the transmission gates allow the data to pass through; otherwise they simply put that portion of the ALU in an electrically disconnected state. There is a considerable reduction in power consumed, since almost 70% of the instructions in the instruction set use the ALU, operating only the part of the ALU needed by the current instruction and turn off the rest.

Key Words: power management, Clock gating, embedded systems, ALU

Abstract id:31

CONTROL SETTING OF UPFC THROUGH CURRENT INJECTION BASED POWER FLOW CALCULATIONS

P.Sangameswara Raju, Joseph Henry , V.Moorthy

Swarnandhra College of Engineering and Technology, A.P.

Electrical networks are interconnected to different generating stations and load centers according to the existing plan. But load demands on the system are not constant. With the increase of industrial growth and domestic load, more power is consumed by the different loads. To fulfill the load demand with existing power system, FACTS (Flexible AC Transmission System) devices are being used to control the power flow. Controlling power flow in modern power system can be made more flexible by the use of recent developments in power electronic and computing control technology. Therefore in this paper UPFC (unified power flow controller) one of the FACTS devices has been used to enhance controllability and power transfer capability in ac systems, which is depends on the control setting of UPFC



through power flow calculation. This paper describes a current injection Newton-Raphson formulation for the solution of the power flow problem, through which control setting of UPFC can be determined directly. This method is analyzed for a 5-bus test system. The results have been obtained for both the cases by MATLAB and compared.

Key Words: current injection method, Flexible AC Transmission System (FACTS), Newton-Raphson method, Unified Power Flow Controller (UPFC)

Abstract id:32

SOFTWARE IMPLEMENTATION OF DIRECT TORQUE CONTROL OF PMSM WITH A THREE-LEVEL INVERTER

SSSR Sarathbabu Duvvuri Durga Prasad Garapati P.Ramprasad

Thapar University, Patiala,

The direct torque control (DTC) technique for a PMSM motor is receiving increasing attention due to the important advantages as the elimination of the current controllers and the low dependence on motor parameters when compared with other motor control techniques. The basic principle of DTC is to directly select stator voltage vectors according to the differences between the references of torque and stator flux linkage and their actual values. However a high torque ripples and stator magnetic flux linkage ripples results when using a two-level inverter with hysteresis controller.

In this paper the basic theory of operation for the control technique is presented. A mathematical model for the proposed Direct Torque Control of the Permanent Magnet Synchronous Motor topology is developed. A simulation model is developed in MATLAB/SIMULINK with a three-level inverter and the results of DTC with two-level inverter and three-level inverter are compared.

Key Words: Permanent magnet synchronous motors, Electrical drives, Multi-Level converters, Space vector, Direct Torque Control

Abstract id:37

DESIGN AND PERFORMANCE EVALUATION OF HYBRID SHUNT ACTIVE FILTER

J.Somlal,M.Bhanu,

Swarnandhra College of Engineering and Technology, A.P.

Most of the more important international standards define power quality as the physical characteristics of the electrical supply provided under normal operating conditions that do not disrupt or disturb the consumer's processes. Therefore, a power quality problem exists if any voltage, current or frequency deviation results in a failure or a bad operation of customer's equipment. A flexible and versatile solution to power quality problems is offered by shunt active power filters. In this paper the current harmonic can be compensated by using the Shunt Active Power Filter, Passive Power Filter and the combination of both. The system has the function of voltage stability, and harmonic suppression. The reference current can be calculated by dq transformation. An improved generalized integrator control was proposed to improve the performance of APF. The simulation results of the non- linear systems have been carried out with MATLAB 7.6.

Key Words: Active power filter (APF), Generalized integrator controller, harmonic suppression, MATLAB,voltage stability

Abstract id:41

IMPLEMENTATION OF USB SLAVE TO SLAVE FILE TRANSFER USING ARM PROCESSOR

Valliamma.G.Y.S,Vishnupriya.V,Yagavapriya.M,Sumithra.L,S. Karunakaran

Asst. Prof. / ECE, Saveetha Engineering College, Email:karunakaransekar@gmail.com, Email: valliamma.gys@gmail.com

The popularity of Universal Serial Bus (USB) storage devices is an indication of the computer user's need for a fast, large capacity and easily accessible system for data storage. The disadvantage of USB storage devices is that being a peripheral device, it needs a host, usually a Personal Computer (PC) to initiate and mediate communications between two USB storage devices.

The USB based slave to slave file transfer system seeks to create a bridge between two slave devices for file transfer when a computer is unavailable. The system is able to check if there is sufficient memory space for the file/folder/directory to be copied onto the destination flash drive.

The USB Slave to Slave File Transfer System (USS FiTradev) utilizes the Cypress CY76C7300 USB controller to facilitate file transfers while a ARM processor handles the user interface. The user interface consists of four scroll buttons, two multifunction control buttons and a 20x4 line LCD screen. The USS FiTraDev system supports USB flash drives that operate under the USB Mass Storage Class. Copy functions include single file transfer, single folder transfer and entire memory content transfer. The system allows overwriting when a file of the same name is found in the destination flash drive. An auto-rename function is also available. The delete function is enabled when the size of the file to be transferred exceeds the available space on the destination flash drive. The system has high file transfer accuracy for single files and folders that are within the six-folder depth level with a maximum file transfer speed. The use of five AA sized alkaline batteries allows the transfer of data in a short span using a linear regulator.

Key Words: USB storage devices, user interface, flash drive, file transfer

Abstract id: 100

POWER SYSTEM OPTIMIZATION UNDER UNCERTAINTIES:A FUZZY MODULATED PSO APPROACH

N.M. Jothi Swaroopan¹, P. Somasundaram²

¹Asst.Prof, Saveetha School of Engineering, Chennai, India, *Corresponding Author: nmjothi@yahoo.com

²Asst.Prof, Anna University, Chennai, India

Any power systems optimization problems have to be solved under uncertainty. The scenarios used for modeling the uncertainties should be able to represent their stochastic nature requires huge sampling. The particle swarm optimization (PSO) based scenario reduction technique can be a good option to approximate the initial scenario distribution. And also the computation time can be reduced and the performance can also be improved by using Fuzzy modulated PSO. This paper proposes a multi-stage model for the optimal operation of a interconnected power system. A parameter free self learning particle swarm optimization and Fuzzy Modulated algorithms have been used to solve the deterministic and stochastic models. The robustness of the solution procedure has been verified and compare with conventional algorithms. The results shows the effective utilization of the proposed algorithms.



Key Words: Particle swarm optimization, multi-stage model, Fuzzy modulated PSO

Abstract id: 102

ARTIFICIAL INTELLIGENCE BASED ADAPTIVE TRAFFIC FLOW DISTRIBUTION IN COMPUTER NETWORK

Jaya Mabel Rani

Lecturer, Maamallan Institute of Technology, Chennai, India

This paper presents a new concept to provide the adaptive optimal traffic distribution for dynamic condition of traffic matrix using nature based intelligence methods. With the defined load and fixed capacity of links, average delay for packet has been minimized with various variations of evolutionary programming and particle swarm optimization. Comparative study has been given over their performance in terms of converging speed. Universal approximation capability, the key feature of feed forward neural network has been applied to predict the flow distribution on each link to minimize the average delay for a total load available at present on the network. For any variation in the total load, the new flow distribution can be generated by neural network immediately, which could generate minimum delay in the network. With the inclusion of this information, performance of routing protocol will be improved very much.

Key Words: adaptive optimal traffic distribution, nature based intelligence methods, Universal approximation capability

Abstract id:108

DESIGN AND IMPLEMENTATION OF SHIFT – AND – ADD MULTIPLIER BZ-FAD ARCHITECTURE

D. Maragathavalli

Saveetha school of Engineering, Saveetha University, Chennai, Email: maragathamvalli@gmail.com

In this paper, a low-power structure called bypass zero, feed A directly (BZ-FAD) for shift-and-add multipliers is proposed. The architecture considerably lowers the switching activity of conventional multipliers. The modifications to the multiplier which multiplies A by B include the removal of the shifting the B register, direct feeding of A to the adder, bypassing the adder whenever possible, using a ring counter instead of a binary counter and removal of the partial product shift. The architecture makes use of a low-power ring counter proposed in this work. Simulation results for 32-bit radix-2 multipliers show that the BZ-FAD architecture lowers the total switching activity up to 76% and power consumption up to 30% when compared to the conventional architecture. The proposed multiplier can be used for low-power applications where the speed is not a primary design parameter.

Key Words: (BZ-FAD), low-power structure

Abstract id:110

REMOTE CONTROL USING IR RAYS

J. Immaculate Sagayarani

STET (W) College, Mannargudi, Email: jisir2010@yahoo.com

A Remote control is a component of an electronic device, most commonly a television set, used for operating device wirelessly from a short line-of-sight distance.

In this project, a IR remote switch that can use the same remote which is used for selecting TV channels and then pointing the same remote to your switchboard to switch on/off the fan or the tube light. This is a simple circuit to remotely switch on/off any electrical device through a relay using the normal TV/VCR/VCP/VCD remote control unit. It works up to a distance of about 10 meters.

This is a single channel universal switch that may be used with any infrared remote control using 36-38 KHz. This is a very common remote handset frequency. In place of IR 1 a TSOP1738 receiver may be used.

If we were watching TV, we could press and hold any button on the TV remote to trigger the circuit. In order not to change channel, we could press the button of the channel we are watching. We can connect anything to the relay, for example a lamp, but make sure the relay contacts can handle the rated voltage and current.

To control the room lighting in your home theatre setup using any of the remotes we already have. The circuit is powered using a simple transformer less power supply from the line itself, making it compact and easily built into a light switch, wall box, power bar or even the appliance we wish to control.

This remote switch can be operated from 50m distance and very easy to us.

Abstract id:111

MULTIMEDIA TRANSPORT USING SIGMA

B.Jaiganesh¹, R.Ramachandran²

¹Research Scholar, ECE Department, Sathyabama University, Chennai, Email: jaiganesh.price@gmail.com

²Principal, Sri Venkateswara College of Engineering, Sriperumbudur, Chennai, Email: rampran@yahoo.com

The current research thrust is to ensure an uninterrupted multimedia transmission when the MH moves between networks or subnets. Ensuring uninterrupted multimedia transmission during handoff is challenging, because the MH is already receiving multimedia from the network to which it is connected; when it moves into another network, it needs to break the connection with the old network and establish a connection with the new network. when it moves it has to make a connection with the new network, say Wireless Network 2. The reestablishment of a new connection takes a considerable amount of time, resulting in the possibility of interruption and resulting loss of multimedia. The current TCP/IP network infrastructure was not designed for mobility. It does not support handoff between IP networks. For example, a device running a real-time application, such as video conference, can not play smoothly when the user hands off from one wireless IP network to another, resulting in unsatisfactory performance to the user. Mobile IP (MIP), from IETF, addresses the mobility problem. MIP extends the existing IP protocol to support host mobility, including handoff, by introducing two network entities: Home Agent (HA) and Foreign Agent (FA). The HA and FA work together to achieve host mobility. The correspondent node (CN) always communicates with the Mobile Node (MN) via its home network address, even though MH may not dwell in the home network. For CN to have seamless access to MN, the MH has to be able to handoff in a timely manner between networks. Handoff latency is one of the most important indicators of handoff performance. Large handoff latency degrades performance of real-time applications. For example, a large handoff latency will introduce interruption in a video conference due to breaks in both audio and video data transmission. In addition to high handoff latency, MIP suffers from a number of other problems including Triangle

Routing, high signaling traffic with the HA, etc. A number of approaches to reduce the MIP handoff latency are given below. Mobile IP uses only one IP; a certain amount of latency in data transmission appears to be unavoidable when the MH performs a handoff. This is because of MN's inability to communicate with the CN through either the old path (because it has changed its wireless link to a new wireless network) or the new path (because HA has not yet granted its registration request).

SIGMA overcomes the issue of discontinuity by exploiting multi-homing to keep the old data path alive until the new data path is ready to take over the data transfer, thus achieving lower latency and lower loss during handoff between adjacent subnets than Mobile IP.

Key Words: handoff latency, IETF

Abstract id:112

SWITCHLESS MUSIC CALLING BELL WITH COUNTER

S. Malini

STET (W) College, Mannargudi, Email: saralatamil12@gmail.com

The switch-less automatic calling bell system can be fabricated using low cost and easily available components. When a visitor enters the room infrared beam between IR emitter and IR detector is interrupted for moment.

This results in a specific musical tune being played and a display indicating the number of visitors entering the house advances by one. When the next visitor enters the room a different musical tune is heard. In this way up to 16 different musical tunes are repeated.

Maximum count of display is 99. After displaying 99, counter is automatically reset to zero and starts counting again.

A short duration switching pulse is sufficient to trigger both bell and counter. Once a trigger pulse is applied to musical bell, it starts playing a tune and it will stop only on completion of the specific tune. After that it will reset automatically and be ready for the next trigger/tune counter meanwhile also advances by one.

It can be used for safety purposes both in home and in factories, bank industries, etc..

A very important advantage of this project is the entry of unwanted persons without the knowledge of house owners can be identified easily.

Abstract id:113

LDR BASED MOBILE CHARGER

Margaret Sahaya Rani

STET (W) College, Mannargudi, Email: magigolu@yahoo.com

Now a days mobile has become a essential part of life. Everyone needs a mobile to communicate with each other. Starting from a small vendor to very big industrialist needs a mobile to satisfy their needs. At this juncture most of us fail to charge the mobile everyday, whenever we go outside if our mobile is not charged then we find very difficult to communicate with each other. Thus we are isolated to avoid the situation we have designed a automatic coin based charger.

The objective of this project is to design a machine at a very low cost that can charge a mobile for a specific period of time. This machine is primarily design to charge a mobile for specific period of time.

Abstract id:114

POWER FLOW CONTROL IN A POWER SYSTEM NETWORK USING UPFC

P.Marimuthu¹, B.Basavaraja²
Saveetha University

¹email:spm_muthu2001@yahoo.com

²Member IEEE (2email:banakara36@gmail.com)

In this paper, real and reactive power of the unified power-flow control (UPFC) system is analyzed. The results related to UPFC control are shown in this paper. First, the shunt converter provides all of the required reactive power during the power-flow changes if the UPFC bus voltage is constant. Second, the UPFC bus voltage can be controlled both from the sending side and from the receiving side. Based on the analysis, a coordination controller is proposed for the UPFC. The basic control strategy is such that the shunt converter controls the transmission-line reactive power flow and the dc-link voltage. The series converter controls the transmission-line real power flow and the UPFC bus voltage. The real/reactive power coordination controllers in the UPFC control system can obtain good performance both during transient and stable conditions. Simulation works have been conducted in MATLAB to verify the proposed scheme.

Key Words: reactive power balance, real power balance, series converter, shunt converter, Unified power-flow controller (UPFC)

Abstract id:116

CLOCK SYNCHRONIZATION IN DISTRIBUTED SYSTEM

Aishwarya.K

A.M.A college of Engineering , Kanchipuram

Clock synchronization is a fundamental building block for many distributed applications. In this paper, the problem of realizing a common software clock among a large set of nodes with an internal time reference, any centralized control, and where nodes can join and leave the distributed system at their will. The paper proposes an internal clock synchronization algorithm which combines the gossip-based paradigm with a nature inspired approach, coming from the coupled oscillator's phenomenon, to cope with scale and churn.

The algorithm works on the top of an overlay network and uses a uniform peer sampling service to fulfil each node's local view. Therefore, differently from clock synchronization protocols for small scale and static distributed systems, here, each node synchronizes regularly with only the neighbours in its local view and not with the whole system. An evaluation of the convergence speed and the synchronization error of the coupled-based internal clock synchronization algorithm have been carried out, showing how convergence time and the synchronization error depend on the coupling factor and the local view size. Moreover, the variation of the synchronization error with respect to churn and the impact of a sudden variation of the number of nodes have been analyzed to show the stability of the algorithm. In all these contexts, the algorithm shows nice performance and very good self-organizing properties. Finally, we showed how the assumption on the existence of a uniform peer-sampling service is instrumental for the good behaviour of the algorithm and how, in system models where network delays are unbounded, a mean-based convergence function reaches a lower synchronization error than median-based convergence functions exploiting the number of averaged clock values.

Key Words: Permanent magnet synchronous motors, Electrical drives, Multi-Level converters, Space vector, Direct Torque Control

Abstract Id:120

A NEW FAST AND EFFICIENT DECISION-BASED ALGORITHM FOR REMOVAL OF IMPULSES IN HIGHLY CORRUPTED IMAGES AND VIDEOS

Kalyan Sagar Kadali, K.S.Srinivasan

¹Lecturer, Department of EEE, Saveetha School of Engineering, Saveetha University, Chennai, India, Kalyansagar.k@gmail.com

²Professor, Department of ECE, Turbo Machinery Institute of Technology, Hyderabad, India, sshari_2003@yahoo.com

A new fast and efficient decision-based algorithm for the removal of impulses in Images is presented. The proposed method consists of two operations to enhance the filtering namely, detection of corrupted pixels and estimation of new pixels for replacing the corrupted pixels. The new algorithm shows significantly better image quality than a standard median filter (SMF), adaptive median filters (AMF), threshold decomposition filter (TDF), cascade, and recursive nonlinear filters. The algorithm uses simple fixed length 5×5 window to avoid blurring due to large window sizes. However, the restricted 5×5 window performs mean filtering operation for estimating the uncorrupted pixel value whenever noise is excessive. The proposed method removes the noise effectively even at noise level as high as 90% and preserves the edges.

Key Words: Decision-based median filter, impulse noise, mean filter

Abstract Id:121

MESSAGE FERRYING APPROACH IN STORE CARRY FORWARD ROUTING IN MOBILE ADHOC NETWORK

G.Ganesh

Saveetha School Of Engineering, Saveetha University, Email: ganeshgg83@gmail.com

Two schools of thought exist in terms of handling mobility in mobile ad hoc networks (MANETs). One is the traditional connection-based model, which views node mobility as undesirable and tries to either remove (through recovery schemes) or mask (through tolerant schemes) the effect of mobility. The other is the mobility-assisted model, which considers mobility as a desirable feature, where routing is based on the store-carry-forward paradigm with random or controlled movement of mobile nodes (called ferries). It is well known that mobility increases the capacity of MANETs by reducing the number of relays in routing. Surprisingly, only two models, diameter-hop-count in the connection-based model and constant-hop-count in the mobility-assisted model, which correspond to two extremes of the spectrum, have been systematically studied.

In this paper, I propose a new routing model that deals with message routing as well as trajectory planning of the ferries that carry the message. A logarithmic number of relays is enforced to achieve a good balance among several contradictory goals, including increasing network capacity, increasing ferry sharing, and reducing moving distance. The model considers the dynamic control of ferries in terms of the number of ferries, trajectory planning of ferries, and node communication and synchronization. The effectiveness of the proposed model is evaluated analytically as well as through simulation.

Key Words: MANETs, mobile nodes, network capacity, store-carry-forward, trajectory planning.

Abstract Id:123

CURRENT SELF-BALANCE IN MULTIPHASE CONVERTERS

Mr.M.Reji

Saveetha School of Engineering, Saveetha university

Some of the recent applications in the field of the power supplies use multiphase converters to achieve fast dynamic response, smaller input/output filters, or better packaging. Typically, these converters have several paralleled power stages, with a current loop in each phase and a single voltage loop. The presence of the current loops avoids current imbalance among phases. The purpose of this paper is to demonstrate that, in CCM, with a proper design, there is an intrinsic mechanism of self-balance that reduces the current imbalance. Thus, in the buck converter, if natural zero-voltage switching (ZVS) is achieved in both transitions, the instantaneous inductor current compensates partially the different DC currents through the phases. The need for using n current loops will be finally determined by the application but not by the converter itself. Using the buck converter as a base, a multiphase converter has been developed.

Key Words: CCM-Continuous conduction mode

Abstract id:132

MEMS BASED NON-INVASIVE SYSTEM FOR MONITORING AND CONTROLLING OF HUMAN BLOOD GLUCOSE LEVELS

Monica P Suresh

, Department of Electrical & Electronics Engg, Saveetha Engineering College

Conventional methods for measuring human blood glucose levels involves obtaining blood sample by pricking the ball of ones finger. Controlling of blood glucose level in case the level is high is done by injecting insulin. Both these are painful especially when they have to be done regularly. Hence a non-invasive smart system for measuring and controlling of Blood glucose levels is presented here in this paper. The system proposed allows altering the dosage of insulin delivered depending on the level of blood glucose level sensed.

An electro-enzymatic sensors are used to sense the level of glucose. Electro-enzymatic glucose sensors are designed using Gold(Au) electrodes on glass substrates to reduce the cost of production and simplify the fabrication process. This output of this sensor actuates an insulin delivery system. Insulin is delivered transdermally through an array of micro needles. The chip consists of an array of high aspect ratio (upto 50), high density(1×10^6 needles/cm²) hollow micro needles to be inserted into the skin upto a depth of 100 microns with insulin reservoirs connected to the needles. This system offers scope for mass production and therefore becomes an attractive method in combating diabetes.

Abstract id:133

REAL TIME FINANCIAL SYSTEM USING CLOUD COMPUTING TECHNOLOGY

K. Mahalakshmi

Saveetha School Of Engineering, Email: Mahalakshmi2599@gmail.com

The mainstay of the proposed framework is to create a real time financial system based on cloud computing technologies that enable macroeconomic analysis and forecasts of the financial markets and their instruments. A new computational paradigm, called Cloud Computing, which will allow the companies involved in promoting its popularity to open the doors to Web 3.0. Cloud computing is thought by some to be an innovative term, recently introduced by the media. But behind this poetic name probably lies one of the most important new technologies in the ICT area. The term refers to an important and long-term trend: computing over the Internet. The large computing and storage capacity offered by grid technology, led to the development of another service category, at the time not identifiable as belonging to a single category, for example web-mail services, web-office automation, web folders for images and so on. Only later were these services defined as cloud services once common features had been identified between these, and only subsequently was the cloud computing paradigm defined as a hybrid model for exploiting the resources provided by computer networks.

Abstract id:134

DESIGN, MICROWAVE ASSISTED SYNTHESIS, AND CHARACTERIZATION OF A NOVEL [16]-MEMBERED DIOXADIAZA MACROCYCLIC LIGAND (L1) AND ITS Co(III), Ni(II), AND Cu(II) COMPLEXES

A. N. Paul Angelo* and Lilly Flora#

*Department of Chemistry, St. Joseph's College(Autonomous), Tiruchirappalli- 620 002.

#Department of Chemistry, Saveetha Engineering College, Thandalam , Chennai-602 105

A hitherto new unreported [16]-membered dioxadiaz macrocyclic ligand (L1), (8,13-dioxa-2,3:6,7:10,11:14,15-tetrabenzo-1,4-diazacyclohexadeca-4,16-diene) has been synthesized by two different synthetic routes each involving two stages. Salicylaldehyde in the presence of sodium hydroxide was treated with α,α' -dibromo-o-xylene to yield the dial derivative. The dial derivative was further made to undergo Schiff base condensation with 1,2-diaminobenzene to yield the bright yellow macrocycle in good yield. In the second method Salop was synthesized and allowed to undergo Williamson's condensation with α,α' -dibromo-o-xylene to yield the ligand (L1). The neutral sixteen membered tetradentate dioxadiaz ligand (L1) complexes with Ni(II), Co(III) and Cu(II) chloride, bromide, nitrate and thiocyanate salts in 1:1 mole ratio to yield complex of the formulae $[\text{Co}(\text{L1})\text{Cl}_2]\text{Cl}$, $[\text{Co}(\text{L1})\text{Br}_2]\text{Br}$, $[\text{Co}(\text{L1})(\text{NO}_3)_2](\text{NO}_3)$, $[\text{Cu}(\text{L1})\text{Cl}]\text{Cl}$, $[\text{Cu}(\text{L1})\text{Br}]\text{Br}$, $[\text{Cu}(\text{L1})(\text{NO}_3)](\text{NO}_3)$, $[\text{Ni}(\text{L1})\text{Cl}_2]$ and $[\text{Ni}(\text{L1})(\text{NO}_3)_2]$. The complexes were also synthesized by the metal template method. The yield of the template procedure was found to be greater than the non-template method. . The ligand and the complexes were characterized by elemental analysis, electronic spectroscopy, IR, Conductivity measurements, EPR, magnetic susceptibility, ^1H NMR, FAB-MS and Cyclic voltammetry studies. The [16] – membered quadridentate macrocycle was found to accommodate all the ions, but attempts to synthesize the complexes of lower metal ions failed due to the mismatch in the cavity size and ion radius.



Abstract ID:1.

MULTI- DOCUMENT SUMMARIZATION BY PROBABILISTIC APPROACH

B. Anand Kumar, P.V.Naga Srinivas

Swarnadhra college of Engineering Technology, Narsapur, Andhra Pradesh,

Email Id :speak2nandu@gmail.com

Data availability is not a major issue at present times in view of the widespread use of Internet; however, information and knowledge availability are the issues. Due to data overload and time-critical nature of information need, automatic summarization of documents plays a significant role in information retrieval and text data mining. This paper discusses the design of a multi-document summarizer that uses Katz's K-mixture model for term distribution. The model helps in ranking the sentences by a modified term weight assignment. Highly ranked sentences are selected for the final summary.

The sentences that are repetitive in nature are eliminated, and a tiled summary is produced. Our method avoids redundancy and produces a readable (even browsable) summary, which we refer to as an event-specific tiled summary. The system has been evaluated against the frequently occurring sentences in the summaries generated by a set of human subjects. Our system outperforms other auto-summarizers at different extraction levels of summarization with respect to the ideal summary, and is close to the ideal summary at 40% extraction level.

Keywords: Text Summarization; Probabilistic model; Tiled summary.

Abstract ID:3.

EVALUATION OF MEDICAL IMAGES USING MULTI-WAVELET BASIS AND FUSION RULES

K.R.Anandh

Lecturer / ECE, S.K.P. Engineering College, Tiruvannamalai. India.

Email Id: anandhmurali@gmail.com

Evaluations of medical images are more useful for doctors in accurate diagnosis of diseases. The evaluation techniques mostly include image processing algorithms and its applications. There are many evaluation techniques and Image fusion is one among them. Image fusion is the process of combining relevant information from two or more images into a single image, which should be more informative than any one of the input images. In medical scenario, different modalities serve different purposes; for example CT images are used more often to visualize dense structures like bones while MRI images are for diagnosing soft tissues. Hence in order to provide more accurate information for diagnosis and treatment it is necessary to fuse them by using their complementary information. The underlying idea in the process of fusing CT and MRI is (1) choosing a transformation from the wavelet family for coefficient generation and (2) using a best fusion rule for fusing images. Generally single wavelet concept is used for image decomposition. For example DWT, Curvelet transform, complex valued wavelets, Contourlet transform etc are the transforms used. Weighted average method, Laplacian pyramid method, maximal local variance and energy rule, ICA and PCA are the fusion rules adopted.

In the proposed work, Multiwavelet bases are to be used for decomposing the CT/MRI images and novel fusion rules are to be identified and used to obtain the fused images. The reason for opting multi wavelet concept is that, single wavelet basis is difficult to meet high demands of image fusion. Also, different wavelet bases have different time-



frequency characteristics. Recently, though PCA has attracted much attention for fusion methods, it suffers from poor performance and speed crisis due to its huge covariance matrix size. Therefore, we propose to use novel fusion rules to get around the issues. The concept of Kernel PCA and SVD are to be incorporated and tested in the selection of low frequency and high frequency components for fusion of images. Finally, the obtained fused image will be subjected to various quantitative evaluation criteria.

Keywords: CT scan, MRI scan, Image fusion.

Abstract ID:4.

AN EQUIVALENT CURRENT INJECTION BASED NEWTON TYPE OPTIMAL POWER FLOW

P.Anil kumar,C.D.Varaprasad,G.Saibaba

Department of Electrical Engineering, Narayana Engineering College, Nellore

Department of Electrical Engineering, Swarnandhra College of Engineering and Technology,

Email:varaprasadchitte@gmail.com

The optimal power flow is a power flow problem in which certain variables are adjusted to minimize an objective function such as cost of the active power generation or the losses, while satisfying physical operating limits on various controls, dependent variables and function of control variables. Current interest in OPF covers around its ability to solve for the optimal solution that takes account of security of the system. In other words, the optimal power problem seeks to find an optimal profile of active and reactive power generations along with voltage magnitudes in such a manner as to minimize the total operating costs of electric power system, while satisfying network security constraints. The OPF method is based on load flow solution by the Newton's method by polar version has met lot of computational challenges brought up by the deregulated electrical market such as time consuming, accuracy, memory requirement etc. Therefore in this paper we have proposed an equivalent current injection based Newton type optimal power flow to overcome the difficulties faced by the traditional Newton type optimal power flow analysis. This algorithm has given simulated results through MATLAB. The proposed solution algorithm attempts to produce robust and computationally efficient convergence characteristics.

Keywords: Current Injection Method, Deregulated electric market, MATLAB, Newton-Raphson method, Optimal Power Flow.



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