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1.

Authors: Zhenxing Luo

Paper Title: A New Direct Search Method for Distributed Estimation in Wireless Sensor Networks

Abstract: Distributed estimation is a popular research topic in wireless sensor networks (WSNs). A maximum likelihood estimation (MLE) method is widely used in WSNs for distributed estimation. However, the MLE method is a computationally intensive method. To overcome this problem, in this paper, a new direct search method will be presented. This method has much lower computation complexity while can achieve estimation results similar to the results given by the MLE method.

Keywords: Direct search, maximum likelihood estimation, wireless sensor networks.

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2.

Authors: Zhenxing Luo

Paper Title: Overview of Applications of Wireless Sensor Networks

Abstract: Wireless sensor networks (WSNs) have become a popular research topic recently due to their wide applications. Such wide applications also drive the development of WSNs because usually, the development of WSNs comes from challenges in real applications. Therefore, it is worthwhile to review some real applications to see how WSNs can be used and developed in the future to address more practical challenges.

Keywords: Applications, medical area, wireless sensor networks.

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3.

Authors: **Pushpendra Singh, Om Prakash Yadav, Yojana Yadav**

Paper Title: **ECG Signal Compression Validation by a New Transform Technique**

Abstract: Electrocardiogram signal compression algorithm is needed to reduce the amount of data to be transmitted, stored and analyzed, without losing the clinical information content. This work investigates a set of ECG signal compression schemes to compare their performances in compressing ECG signals. These schemes are based on transform methods such as discrete cosine transform (DCT), fast Fourier transform (FFT), discrete sine transform (DST), and their improvements. An improvement of a discrete cosine transform (DCT)-based method for electrocardiogram (ECG) compression is also presented as DCT-II. A comparative study of performance of different transforms is made in terms of Compression Ratio (CR) and Percent root mean square difference (PRD).The appropriate use of a block based DCT associated to a uniform scalar dead zone quantiser and arithmetic coding show very good results, confirming that the proposed strategy exhibits competitive performances compared with the most popular compressors used for ECG compression. Each specific transform is applied to a pre-selected data segment from the Physiobank ATM database, and then compression is performed.

Keywords: Compression Ratio, Compression factor, Compression time, ECG, PRD.

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4.

Authors:	**B.C.Patle, D.V. Bhope**
Paper Title:	**Stress Analysis of Plate With Oblique Hole**

Abstract: In this study, the wok is carried out to analyzed, the stresses of plate with oblique hole with the Finite Element Analysis. Stress analysis of a series of flat plates with oblique holes subjected to axial tension has been carried out using the finite element method (FEM). Different plate hole diameter-width ratios, angles of hole obliquity have been considered to provide stress concentration factors at such holes. The work covers plate hole diameter- width (d/w) ratios from 0.1 to 0.9, hole obliquity angles from 00 to 800 and inclination of hole axis in widthwise, lengthwise and diagonal wise direction, 300 direction and 600 direction.

Keywords: Finite Element Method, Oblique Hole, Stress Analysis.

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5.

Authors:	**Aqueel Ahmed, Shaikh Abdul Hannan**
Paper Title:	**Data Mining Techniques to Find Out Heart Diseases: An Overview**

Abstract: Heart disease is a major cause of morbidity and mortality in modern society. Medical diagnosis is extremely important but complicated task that should be performed accurately and efficiently. Although significant progress has been made in the diagnosis and treatment of heart disease, further investigation is still needed. The availability of huge amounts of medical data leads to the need for powerful data analysis tools to extract useful knowledge. There is a huge data available within the healthcare systems. However, there is a task of effective analysis tools to discover hidden relationships and trends in data. Knowledge discovery and data mining have found numerous application in business and scientific domain. Researchers have long been concerned with applying statistical and data mining tools to improve data analysis on large data sets. Disease diagnosis is one of the applications where data mining tools are proving successful results. This research paper proposed to find out the heart diseases through data mining, Support Vector Machine (SVM), Genetic Algorithm, rough set theory, association rules and Neural Networks.

In this study, we briefly examined that out of the above techniques Decision tree and SVM is most effective for the heart disease. So it is observed that, the data mining could help in the identification or the prediction of high or low

risk heart diseases.

Keywords: Data Mining, Heart Disease, SVM, rough sets techniques, association rules & clustering.

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6.

Authors:	**Guropinder Singh, Parvinder Singh**
Paper Title:	**Strong/Weak Muscle Fiber Analysis by Pattern Recognition of SEMG Based On BP and RBF Neural N/W**

Abstract: In this paper, we use both BP neural network and RBF neural network to identify SEMG from human upper arm (Bicep). In the experiments, we study the SEMG signal strength by different algorithm We use two electrodes to extract SEMG signal from the upper arm biceps, then analyze this signal using the peak value of SEMG signal , put this value vectors into BP neural network and RBF neural network to complete strength recognition. The results of the experiments using the method introduced in this paper show that the average recognition rate of strength of muscle are above 94 % for BP and is above 99% for RBF neural network.

Keywords: BP neural network; pattern recognition; RBF neural network; Surface Electromyography Signal.

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7.

Authors:	**Abhishek Gandhar, Balwinder Singh, Rintu Khanna**
Paper Title:	**Impacts of Facts Technology-A State of Art Review**

Abstract: FACTS (Flexible AC Transmission Systems) means a whole family of controllers and devices for increase the use and flexibility of power systems. These controllers are installed in many places and improving the capabilities of different power systems.. This paper presents a review on the research and developments in the area of FACTS controllers and their contributions. This paper will treat benefits of FACTS devices installed in power systems such as increment in power transmission capability and a reduction in transmission losses. And improved transient and dynamic stability, This paper also includes the main barriers of voltage instability and power transmission structure. Authors strongly believe that this survey article will be very much useful to the researchers

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for finding out the relevant references in the field of voltage stability improvement by using FACTS controllers

Keywords: FACTS, SVC, STATCOM, UPFC.

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Authors: **Zeiad El-Saghir, Hamed S. El-Ghety, M. AbdelAziz**

Paper Title: **Efficient Implementation model for Public Geographic Information System: Case Study**

Abstract: Public Geographic Information system (GIS) is a solution that automates the process of collecting community contributions of spatial data, cross-referenced to base maps. It provides the capabilities of analyzing such spatial data giving effective decision support information. On the other hand, the most important implementation models for GIS used recently are Client-Server and Software as a Service (SaaS). This paper focus on giving typical situation as a case study for exploring the advantages of SaaS implementation model over Client server one where public GIS services are implemented first as client server model and secondly when implemented as SaaS. In our new urban City state office, SaaS implementation achieved huge reduction on the total cost of ownership for users of public GIS solution rather than previous GIS Client-Server implementation. High level of cooperative collaboration between departments has been achieved (e.g. survey dept. , land use dept.). Achieved huge reduction on front-up cost

required to start using the GIS solution (typically it costs 4.26% of the total front-up cost in case client-server model is used which was 214000USD), and reduction in maintenance /installation hours needed to fix a bug or install new feature across department rather than previous GIS Client Server implementation where the same maintenance /installation hours must be replicated to install new batch containing the fix for new feature. Hence, SaaS implementation model for public GIS overcomes Client Server model in many different aspects and increased the Return On Investment (ROI) value for public GIS solution as it empowers departments in state office to focus in delivering more spatial business's value rather than being busy with having a dedicated data center to operate and manage separate installation of GIS software in client server model.

Keywords: Cloud Computing, Public Geographic Information System, Software as a service, Client Server.

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Authors: **Virendra Swarnkar, K. J. Satao**

Paper Title: **Understanding Transmission Control Protocols: Basic Survey**

Abstract: Data transfer from one system to another has always been a challenging task. Multiple protocols have been developed to transmit data from one system to another, considering the security, convenience, and speed criteria. TCP (transmission control protocol) stands to be the most widely used and accepted protocol. In this paper we have discussed various commonly employed protocols for data transfer. Many algorithms and protocols have been stated which are capable in providing high speed data transfer along with security, especially in terms of congestions (little or no congestion is desirable). We have studied various transmission control protocols in this paper.

Keywords: TCP, HSTCP, Scalable TCP, SCTP

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10.

Authors: **Sagar Krishna Sivvam, Solomon Gotham**

Paper Title: **A Hybrid and Memory Efficient Multiplier and Accumulator Design Using Radix -4 Algorithm**

Abstract: In this paper we proposed a new architecture for high speed MAC operation. By combining multiplication and addition and devising a hybrid type of Carry save adder, the performance was improved. The proposed CSA uses 1's complement based radix-2 booth algorithm The multiplication and accumulation unit provides high speed multiplication along with accumulative addition. And for final addition some final such as CLA, Kogge stone adder and then adders compare their performance characteristics. The one most effective way to increase the speed of a multiplier is to reduce the number of the partial products. Although the number of partial products can be reduced with a higher radix booth encoder, but the number of hard multiples that are expensive to generate also increases simultaneously. To increase the speed and performance, many parallel MAC architectures have been proposed.
The design was implemented on Xilinx Xc3s500E fpga and the device utilized 13% of the total LUT's and the total power utilization was 0.041mW.

Keywords: Radix-4 Booth multiplier, CLA, multiplier and- accumulator (MAC).

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11.

Authors: **Sandeep Sivvam, Solomon Gotham**

Paper Title: **A Concurrent Self Repair Scheme for Defects in Random Access Memories**

Abstract: Built-in self-repair (BISR) techniques are widely used for repairing embedded random access memories (RAMs). One key component of a BISR module is the built-in redundancy-analysis (BIRA) design. This paper presents an effective BIRA scheme which executes the 2-D redundancy allocation based on a 1-D local bitmap. Two BIRA algorithms for supporting two different redundancy organizations are also proposed. Simulation results show that the proposed BIRA scheme can provide high repair rate (i.e.,the ratio of the number of repaired memories to the number of defective memories) for the RAMs with different fault distributions. Experimental results show that the hardware overhead of the BIRA design is only about 2.9% for an 8192 64-bit RAM with two spare rows and two spare columns. The design is implemented on Xiliinx Spartan3E FPGA and the device used 532 flip-flops out of 3840 available and 439 LUT's out of 3840 and the number of IO blocks used is 13. Moreover, the time overhead of redundancy analysis is very small. Embedded memories are among the most widely used cores in current system-on-chip (SOC) implementations. Total power utilized by the device was0.041mW. Memory cores usually occupy a significant portion of the chip area, and dominate the manufacturing yield of the chip. The BIRA module executes the proposed redundancy analysis (RA) algorithm for RAM with a 2-D redundancy structure, i.e., spare rows and spare columns.

Keywords: BIRA, ReBIRA

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12.

Authors: **B.Rajani Kumari, K.V.Ramana Rao.**

Paper Title: **Dynamic Power Suppression Technique in Booth Multipliers**

Abstract: The SPST has been applied on both the modified Booth decoder and the compression tree of multipliers to enlarge the power reduction. This paper provides the experience of applying an advanced version of our former spurious power suppression technique (SPST) on multipliers for high-speed and low-power purposes. To filter out the use-less switching power, there are two approaches, i.e., using registers and using AND gates, to assert the data signals of multipliers after the data transition. The simulation results show that the SPST implementation with AND gates owns an extremely high flexibility on adjusting the data asserting time which not only facilitates the robustness of SPST but also leads to a 40% speed improvement. Adopting a Xilinx Spartan 3 Xc3s200 board the proposed SPST-equipped multiplier dissipates only 0.0121 mW per MHz in H.264 texture coding applications, and obtains a 40% power reduction and the overall utilization of the resources reduced to 26%.

Keywords: low-power multiplier, spurious power suppression technique (SPST)

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13.

Authors: **Prasad Munasa, P.Jayanagalakshmi**

Paper Title: **Single Dictionary based Cache Compression and Decompression Algorithm**

Abstract: Computer systems and micro architecture researchers have proposed using hardware data compression units within the memory hierarchies of microprocessors in order to improve performance, energy efficiency, and functionality. All work on cache compression, has made unsubstantiated assumptions about the performance, power consumption, and area overheads of the proposed compression algorithms and hardware. It is not possible to determine whether compression at levels of the memory hierarchy closest to the processor is beneficial without understanding its costs. Furthermore, as we show in this paper, raw compression ratio is not always the most important metric. In this paper, we present a lossless compression algorithm that has been designed for fast on-line data compression, and cache compression in particular. The algorithm has a number of novel features tailored for this application, including combining pairs of compressed lines into one cache line and allowing parallel compression of multiple words while using a single dictionary and without degradation in compression ratio. Apart from that we reduced the proposed algorithm to a register transfer level hardware implementation on Xilinx xc3s500E fpga permitting performance, power consumption, and area estimation. The total power consumption of the device was estimated to be 0.081W.

Keywords: Cache compression, pair matching, parallel compression, hardware implementation

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14.

Authors: **S.Rajeswari, P.Deepthi, K.V.Ramana Rao**

Paper Title: **Image Compression Technique using Two Dimensional Discrete Cosine Transform**

Abstract: This paper presents an architecture for the fast computation of the 8×8 two dimensional (2D) Inverse Discrete Cosine Transform. The proposed method is the permanent storage of the Basis Matrices of the 8×8 2D Discrete Cosine Transform (DCT). The sparseness property of the 2D DCT coefficient matrix, the computational time decreases as the number of nonzero coefficients decreases.
The proposed structure computes all 64 pixel luminance values of an 8×8 block simultaneously. The design was implemented in Xilinx Xc3s500 board and the design used 23% LUT’s and 33% of the total slices. The total power consumed by the device was 0.081W.

Keywords: 2D IDCT, image processing, sparse matrices

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15.

Authors: **Asha Latha P, Rambabu B**

Paper Title: **A New Binary Tree approach of Huffman Code**

Abstract: Lossless compression of a sequence of symbols is important in Information theory as well as today's IT field. Huffman coding is lossless and is most widely used. However, Huffman coding has some limitations depending on the stream of symbols appearing in a file. In fact, Huffman coding generates a code with very few bits for a symbol that has a very high probability of occurrence and a larger number of bits for a symbol with a low probability of occurrence [1]. In this paper, we present a novel technique that subdivides the original symbol sequence into two or more sub sequences. We then apply Huffman coding on each of the sub sequences. This proposed scheme gives approximately 10-20% better compression in comparison with that of straightforward usage of Huffman coding. The target FPGA deivce for implementing the design is Xilinx Xc3s500E.The devices utilises 9% and 17% of the total flip flops and LUT's in the FPGA. The total power consumed the device 0.041W.

Keywords: Huffman decoding, Table lookup

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Authors: **Vasantha Sudheer N, Venu Gopal B**

Paper Title: **FPGA Implementation of 64 Point FFT Processor**

Abstract: A power efficient Fast Fourier Transform (FFT) processor for use in the Direction of Arrival (DOA) estimation of a wideband waveform is presented. The target device for implementation is a Xilinx Spartan-3 Xc3s200 Field Programmable Gate Array (FPGA). The FFT processor was developed using the Xilinx ISE in Verilog code. Although the parallel and pipelined architecture uses a large portion of the available FPGA resources, the architecture does yield a high throughput. The total power cosumed by the design is 0.081W

Keywords: Direction of Arrival (DOA), Fast fourier tansform (FFT),FPGA.

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Authors: **Kuldeep Niranjan, Sanjay Srivastava, Jaikaran Singh, Mukesh Tiwari**

Paper Title: **Carbon Nanotube Field Effect Transistor: Fabrication of Thin Film of SiO_2-Based Micro Cantilevers Dielectric Layer between the Channel and Substrate by Anisotropic Chemical Etching of (100) Single**

		Crystal Si	
	Abstract: The performance of the CNT-FET with variable channel length was modified by using the micro-cantilever/micro-bridge of SiO2. The etching technique was used to prepare the micro cantilever of SiO2 from the Si-substrate. We focus the idea about for the fabrication of the nano-device, in order to reduce the dielectric layer thickness. The channel length of the FET was altered along with the dimension of the substrate. One of the possibilities to reduce the thickness of the dielectric layer is either by etching processes or growing the oxide layer from the substrate through etching process. In this case Laser leaching process was used to reduce the thickness of the substrate. Various electrical properties like gate voltage, drain current, mobility, and device performance have been investigated. A better I-V characteristic was obtained with higher mobility in between the channel and used dielectric layer. **Keywords:** Anisotropy, CNT-FET, Lateral growth, Micro-cantilever **References:** 1. G. Moore 1975,"Progress in Digital Electronics," IEDM Tech Digest, 1975, pp 11-13. 2. "International Technology Roadmap for Semiconductors" 2009 Edition. 3. S.J.Wind, J.Appenzeller, and Ph. Avouris,"Lateral scaling in carbon-nanotube field-effect transistors," Phys. Rev. Lett., 91(5), pp .1058301-1058304, (2003). 4. Chun-Wei Chen and Ming-Hsien Leede,"pendency of work function on the geometries of single-walled carbonnanotubes," 2004 Nanotechnology 15 480 doi:10.1088/0957-4484/15/5/013. 5. J. Wildoer, L.Venema, A. Rinzler, R. Smalley, and C. Dekker, "Electronic structure of atomically resolved carbon nanotubes," Nature, vol. 391, pp. 59-62, January 1998. 6. R. Bacon, "Growth, structure, and properties of graphite whiskers," Journal of Applied Physics, vol. 31, pp. 283-290, February 1960. 7. M. Madou, "Fundamentals of micro fabrication," CRC Press, Boca Raton, 1997, p. 145. 8. O. Powell, H. B. Harrison, J. Micromech. Microen., "Fabrication of SiO2-based micro cantilevers by anisotropic chemical etching of (100) single crystal Si," 11 (2001) 217. 9. G. Wilk, R.M. Wallace, J.M. Anthony, "High-κ gate dielectrics: Current status and materials properties considerations," J. Appl. Phys. 89, 5243 (2001). 10. J.D. Plummer, P.B. Griffin, "Material and process limits in silicon VLSI technology," Proc. IEEE 89, 240 (2001). 11. M. Copel, M. Gribelyuk, E. Gusev, "Reaction of SiO2 with hafnium oxide in low oxygen pressure," Appl. Phys. Lett. 76, 436 (2000). 12. M. Gutowski, J.E. Jaffe, C.L. Liu, M. Stoker, R.I. Hegde, R.S. Rai, P.J. Tobin, "Structure and stability of ultrathin zirconium oxide layers on Si(001)," Appl. Phys. Lett. 80, 1897 (2002).	**67-71**
18.	**Authors:**	**Ohaneme C.O., Idigo V.E., Oguejiofor O.S. and Nnebe S.U.**	
	Paper Title:	**Analysis of Ambient Noise Level and its Impact on the Capacity and Coverage of CDMA System**	
	Abstract: Communication services have been the most intriguing things to network users in recent times. Hence there is the need to provide adequate communication facilities such as robust technologies in order to sustain the number of subscribers that are connected to wireless network daily. Therefore this paper provides the best platform to study the effect of ambient noise on wireless cellular network and how it affects the capacity and coverage of the cellular system. Special consideration is given to the Visafone CDMA network cellular environment of South-East Nigeria for the study from where the received signal levels from base stations are taken at various locations. The system is simulated using Matlab to give the vivid account of the effects of ambient noise within the cellular network and how it can be reduced. The simulation results show that at lower ambient noise, an advantage of a network capacity is achieved. **Keywords:** Ambient noises, wireless network, electromagnetic waves, thermal noise, reuse efficiency and ionosphere. **References:** 1. Nathan Blaunstein and Christos Christodoulou, "Radio Propagation and Adaptive Antennas for Wireless Communication Links: Terrestial, Atmospheric and Ionosperic", John Wiley & Sons Inc., 2007, pp 1-21. 2. T.S Rappaport, "Wireless Communications Principles and Practice", Second Edition, PHI Learning Private Limited, 2008, pp 138-157. 3. John D. Klaus and Daniel A. Fleich, "Electromagnetics with Applications, 5th Edition", McGraw-Hill International Editions, Electrical Engineering Series, 1999. 4. Andreas F. Molisch, "Wireless Communications", John Wiley and Sons Ltd, 2006, pp 35-37. 5. Lee W.C.Y., "Mobile Communications Engineering, Theory and Application", 2nd Edition, Tata McGrawHill Ltd 2008 pp 520-527. 6. Wikipedia, the free encyclopedia, "Electromagnetic Radiation", August 2012, pp 1-21. 7. QUALCOM Inc., "CDMA Capacity 2.1 Test Report", August 1993 8. Joseph Wolf, "Phase Noise Measurement with Spectrum Analyzer of the FSE Family", Rhode & Schwarz, Dec., 1995.	**72-78**
19.	**Authors:**	**Zhenxing Luo**	
	Paper Title:	**Distributed Estimation in Wireless Sensor Networks with Heterogeneous Sensors**	
	Abstract: In this paper, a robust distributed estimation method in wireless sensor networks (WSNs) with heterogeneous sensors is presented. Particularly, a single parameter is estimated based on decisions from heterogeneous sensors, which have different signal gains. The sensor gains follow uniform distributions. Using the distributions of sensor gains, we calculated the probability density function of the signal received by sensors. Then, the overall likelihood function for a given decision vector is derived and a maximum likelihood estimation (MLE) method is used to estimate the unknown parameter. To evaluate estimation performance, the Cramer-Rao lower bound (CRLB) is also derived. Simulation results showed that if the range of sensor gains was narrow, the RMS errors were close to CRLB. If the range of sensor gains was wide, the RMS errors deviated from CRLB. **Keywords:** Distributed estimation, maximum likelihood estimation, wireless sensor networks.	**79-82**

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