MANAV
RACHNA
vidyanatariksha

THE ELECTRON

Discovering Knowledge

Electronics and Communication Engineering Department

Manav Rachna International Institute of Research & Studies
(Deemed to be University under section 3 of the UGC Act, 1956)

THE ELECTRON

Discovering Knowledge

Inside Story

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Team The Electron

Dr. Dipali Bansal, HOD (ECE)
Dr. Viimlesh Singh, Associate Professor
Dr. Abhiruchi Passi, Associate Professor
Ms. Priyanka Bansal, Assistant Professor
Mr. Anurag Agarwal, Student

Department Vision

To impart latest knowledge and skills so as to kindle innovation & creativity among students, to develop and sustain a culture of research while promoting values, ethics and professionalism, leading to a progressive career in industry & academia globally.

Department Mission

- To engage modern education aids, laboratories and competent faculty ensuring effective teaching learning process to meet the ever growing and changing industrial and business environment.

- To continuously challenge the young minds with ideas so as to carry out innovative research through interaction with the research organizations & industry and to provide them avenues for recognition by participation in challenging platforms.

- To develop responsible citizens and professional leaders with high ethical and moral values, who contribute in dissemination of universal science and technology.

Program Educational Objectives (PEOs) ECE

PEO 1: To prepare Graduates with sound foundation in fundamentals of basic sciences and to assist them exhibit strong, independent learning, analytical & problem solving skills in Electronics and Communication Engineering domain.

PEO 2: To facilitate learning in the core field of Electronics and Communication Engineering so as to integrate technological progression and software & firmware skills to produce high impact, energy efficient and futuristic solutions.

PEO 3: To prepare Graduates to effectively use modern equipment and programming tools to solve real life multi-disciplinary problems that are technically sound, economically feasible and socially acceptable.

PEO 4: To assist and enable individuals acquire skills to imbibe life-long learning in the field of Electronics and Communication, related research & innovation so as to have progressive careers as Managers or Entrepreneurs.

PEO 5: To inculcate professional and ethical attitude, team spirit, leadership qualities and effective communication skills in Graduates and to make them aware of their social responsibilities.

Program Outcomes (POs) / Program Specific Outcomes (PSOs)

- Apply the knowledge of mathematics, science, engineering fundamentals, andEngineering specialization to the solution of complex engineering problems.

- Identify, formulate, research literature, and analyze engineering problems to arrive at substantiated conclusions using first principles of mathematics, natural, and engineering sciences.

- Design solutions for complex engineering problems and design system components, processes to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations.

- Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

- Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

- Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

- Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

- Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

- Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.

- Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.

- Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments.

- Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

- Connect learning from Core and Disciplinary/Interdisciplinary elective courses of Electronics and Communication Engineering to assimilate technological advancements in the field for analyzing and designing subsystem processes to arrive at the solution to real world problems.

- Acquire hardware and software skills pertinent to research and industry practices in the field of Electronics & Communications while acquiring soft skills like persistence, proper judgment through projects and industrial interactions.

- Ability to identify indigenous processes and components for producing high quality, compact, energy efficient and eco-friendly solutions at affordable prices for existing and new applications directly and indirectly related to Electronics & Communication industry.

- Focus on acquiring right blend of aptitude and attitude so as to be the candidate of first choice for placements and higher education or to become a successful Entrepreneur and a worthy global citizen.

About Department

Electronics and Communication Engineering has long played a critical role in supporting innovations that improve the quality of life, support economic growth, and address societal problems. The essential technologies that connect society: mobile phones, laptops, wireless communications, electronic displays, "smart" power grids, smart cities, smart buildings and rapidly evolving systems for monetary transactions are all evidence of the impact of innovation in this field of engineering.

The Department was set up in 1997 and its B.Tech-ECE programme was accredited by NBA twice, in 2004 and in 2007. The Department has 26 faculty members of which 10 are Ph.D holders having rich experience in research and teaching. The research interests of the faculty members of the department encompass the wide area of applied and fundamental aspects of Electronics and Communication Engineering including but not limited to Communication Systems, Microelectronics & VLSI, Digital Signal Processing, Wireless and Mobile communication, Antenna Design and RF & Microwave Engineering. Twenty Ph.D. scholars are currently engaged in cutting edge research in the Department and eight have been awarded Ph.D degree. Department has 153 publications in peered reviewed p   restigious international journals, 115 papers in national journals and 90 papers in international/ national conferences. A total of 84 publications from the department are indexed in SCOPUS.

Vice-Chancellor MRIU Message

I am delighted to greet the students, faculty and staff of Electronics & Communication Engineering department through the Vice Chancellor's column of the departmental Magazine. Our goal is to see that our University shines in all areas of academic excellence. This Magazine will provide you with some glimpses of the all round developmental activities of our University in the last few months. We have initiated the present issue as an attempt to bring out in new format information regarding different activities and achievements of our University. Future issues will keep you posted of our progress as we move towards excellence.

Dr. N. C Wadhwa
Vice – Chancellor. MRIU

ED & Dean Message FET, MRIU

It is a matter of great pleasure that the Department of Electronics and Communication Engineering, Faculty of Engineering and Technology has taken the initiative of coming out with its own Departmental Technical Magazine. The Magazine will aim to serve the intellectual minds of the Department. I extend my heartfelt congratulation and good wishes to them for taking this scholarly decision.

Dr. M.K Soni
ED & Dean FET MRIU

Head of Department Message

The ECE Departmental Magazine is a platform for sharing educational information, activities and events related to the ECE Department. Introducing the very first issue, I hope that the magazine will provide useful and relevant information. It is the intent of the department to make it an annual publication to keep in touch with the departmental activities and achievements. This is a platform to share information and you can participate by sharing your thoughts on the Departmental activities or by contributing information on the events th at you have organized.

Dr. Dipali Bansal
Head of Department, ECE

National & International Tie-ups for Hands on Training

- ➢ INTEL Internet of Things (IOT) centre set-up
- ➢ INTEL sponsored Galileo development boards

- ➢ MoU with M/s EdGate Technologies Pvt. Limited, University program partner of Texas Instruments.
- ➢ Texas Instruments has sponsored a specialized Embedded Lab, Power Electronics Lab & Analog kits.

- ➢ Free Wi-Fi in campus
- ➢ Reliance Jio Training Centre to generate resources for internship opportunities.
- ➢ To create a ready talent pool to be hired by Jio Centres.
- ➢ To lead superior research on teaching and learning in optical fiber domain

- ➢ SAP Center for Excellence to assist shape the future of higher education, drive innovation and create a talent pool for SAP ecosystem

- ➢ Microchip Academic Partner Program. FDPs and Internship

- ➢ Got Academic License Grant (02 nos. Visual Fab Process Simulator) and collaborative research in the field of VLSI

- ➢ Established 3D printing Lab facilities and also agreed to bring 3D printing in academics
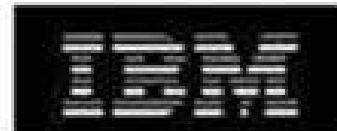
Major Recruiters

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Result Dec 2016

Congratulations

Ankit Mittal
8ECA
9.08

Megha Goyal
8ECB
89.5

Prashant Tanwar

for

Placement in Mentor Graphics

Shahrukh Khan
6ECA
CGPA:8.72

Zerin Moirangthem
6ECB
CGPA: 8.58

Congratulations

Vaishali Mittal
4ECA
CGPA: 8.89

Anita Chudhary
2ECA
CGPA: 9.2

Harsh Vardhan Chaturvedi

for

Qualifying GATE-2017

Expert Talk/Seminar

Date:9.8.2016
Resource Person: Dr. Nilanjan Das
Designation: Research Head
Affiliation: Accendre group
Topic: Introduction to Research
Beneficiary: Student & Faculty
Outcome: Accendre group conducted a talk for all students and faculty mentors of 3rd semester who were introduced to the subject ITR to give a brief about the work expected from them .The talk was conducted on 9.8.2016.

Date:26.9.2016
Resource Person: Mr. Akhil Kanodia
Designation: Head
Affiliation: Connexun
Topic: Pre Placement talk
Beneficiary: Student & Faculty
Outcome: Expert Talk by Connexun on 28th September 2016 for the students of 5th Semester Electronics and Communication.

Date:27.9.2016
Resource Person: Er. KKS Yadav
Designation: Director Training,
Affiliation: Advanced Level Telecom Training Centre, Ghaziabad, BSNL.
Topic: Advances in Satellite Communication
Beneficiary: Student & Faculty
Outcome: Main focus was on Data Communication and gave an overview of Telecom, SoC (System on Chip) & Network on Chip. He emphasized on VHDL Based VLSI and explained various types of network devices which are used presently in the Telecom sector.

Date: 5.10.2016
Resource Person: Mr. Kiran Kumar
Designation: Data and Service Architect from Fidelity International.
Affiliation: Fidelity Business Service India Pvt.
Topic: Education - Industry Gap in Engineering Domain
Beneficiary: Student & Faculty
Outcome: Talk helped budding engineers and their mentors about what industry is expecting from them. He went on to explain nitty-gritty of the requirements of different types of organizations like service based, product based, R&D oriented etc at a pace, to be nibbled easily by young minds.

Date: 13.10.2016
Resource Person: Mr Bala Iyer
Designation: Vice President
Affiliation: Reliance Jio
Beneficiary: Student & Faculty
Outcome: Talk was based on "Learn while you Earn" scheme of Reliance Jio during college days and how to improve their skills which will further contribute in country building

Date: 24.10.2016
Resource Person: Mr. Rakesh Gupta
Designation: Expert R&D
Affiliation: 3ST technologies
Beneficiary: Student & Faculty
Outcome: Entrepreneurship program and placement opportunities in core areas like VLSI, Embedded System & Robotics, MATLAB & software development by Electronics & Communication Engineers.

Date: 8.11.2016
Resource Person: Dr. Maged Elkashlan
Designation: Associate Professor
Affiliation: Queens Mary University, London
Beneficiary: Student & Faculty
Outcome: Talk on statistical signal processing with special emphasis on distributed information processing, security, massive MIMO, millimeter wave communications, heterogeneous and small cell networks, 5G communication etc.

Date: 11.11.2016
Resource Person: Dr.Binay Anand
Designation: Faculty
Affiliation: Houston University, US
Beneficiary: Student & Faculty
Outcome: Talk was based on Project Management and Organizational Development on project delivery and Recent Trends in Engineering

Date: 25.1.2017
Resource Person: Dr. Ankur Bansal
Designation: Assistant Professor
Affiliation: NSIT Delhi
Beneficiary: Student & Faculty
Outcome: The various types of Power Line Communication were discussed. Industrial applications of Power Line Communication were described, and a detailed historical background was provided. How the Power Line Communication technology works was explained in detail.

Date: 22.2.2017
Resource Person: Mr. Chandee Singh
Designation: Engineer
Affiliation: Silicom India Pvt.
Beneficiary: Student & Faculty

Outcome: Talk based on Vector Network Analyzer functioning & usage in different measuring applications. RF network analyzers, spectrum analyzers are normally used to measure the characteristics of a signal rather than a device.

Date: 27.3.2017
Resource Person Mr. Rahul Sachdev
Designation: Head, SAP UA, India Subcontinent
Affiliation: SAP India Subcontinent
Beneficiary: Student & Faculty
Outcome: Implementation and scope of SAP ERP system.
Understanding of Diversity of SAP ERP across Businesses
Enhancing Digital Marketing using SAP ERP Products
Awareness about latest technologies in SAP ERP

Date: 7.6.2017
Resource Person: Dr.Shishur Varma
Designation: Professor
Affiliation: IIIT Allahabad
Beneficiary: Student & Faculty
Outcome: Configuring Wireless Sensor Networks for IOT Applications. The faculties were really benefitted from the vast experience of Dr. Shirshu Varma and his technical knowledge.

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Student Activity

Date: 27.7.2016 – 29.7.2016
Event: Seminar - SAP (ABAP) training
Association: SAP India
Coordinator: Ms. Ila Chaudhary & Mr. Deepak Dhingra
Recourse Person from SAPMr Phillip Samuel Babu
Report: Doubts of the students undergoing training were cleared giving them deep insight to various topics and relating them to industrial aspects. Also, addressed the students regarding various opportunities for the students in the industry and various methods to grab these opportunities

Date:1.9.2016
Event: Club Event-Trending News in ECE
Association: Electro folks- the zeal for Engineering
Coordinator: Ms. Pooja & Dr. Vimlesh Singh
Report: Total 30 student from different **streams** of FET presented different topics like IOT, Graphene, Lifi, Wireless charging, Paper batteries, electropreneur and many more.
1st prize winner: Meetesh Mehra and Sarthak Agrawal (CSE) ; Topic: IOT
2nd prize winner: Manav Panwar and Kamal Tiwari (CSE); Topic: Steps taken by the government to enhance the Electronic sector
3rd prize winner: Yashu Sehgal(CSE);Topic: The Digital India

Date:26.9.2016
Event: Workshop – INTEL IOT
 Association: MRIIC & Intel
Coordinator: Dr. Abhiruchi Passi
Report: The students were given hands on training on how an IOT system works and how data can be sent on cloud Also an introduction to various sensors used in the industry was also told to the students. The students were also told how to design an app using MIT App inventor.

Date:29.9.2016
Event: Workshop - Line follower Robot Autronicals **Association:** Infotech Pvt
Coordinator: Ms. Vibha & Ms. Gagan Deep

Report: Student of Ist Semester ECE attended workshop, learnt the designing concept of robot. Students obtained rich hands on experience on micro controlled programming with the practical approach on hardware & programming integration. They learnt the use of embedded C programming, working of motors and sensors and concept eof Lin follower Robot. Certificates of Participation and Certificates of Co-ordination were given to all participating students and coordinators from Autronicals™ Infotech Pvt. Ltd.

Date: 5.10.2016
Event: Workshop- 3D Printing
Association: MRIIC
Coordinator: Dr. Abhiruchi Passi
Report: The students got an idea of how 3 D printing is widely used in the industry and how with the help of 3 D printing prototypes can be designed without actually manufacturing the components. 3D Printing is an additive manufacturing process that creates a physical object from a digital design. There are different 3D printing technologies and materials you can print with, but all are based on the same principle: a digital model is turned into a solid three-dimensional physical object by adding material layer by layer.

Date: 27.10.2016
Event: Technical paper Presentation **Association:** IEI
Coordinator: Dr. Vimlesh Singh
Report: The students presented their ideas on various topics like Internet of Things, designing of Microstrip Antennas and the latest that is going in the field of electronics. These included 3 papers from final year students and 1 from second year students.
1. "Smart pollution mask" by Ankit Mittal & Shivam (Final Year)
2. "Buzz feet by Gitesh & Sughat (Final Year)
3. "Path Finding using Indoor Positioning System" Karan Kumar & Prashant Tanwar (Final Year)
4. "Rakshak" by Mr. Sujeet (Second Year)

Date:3.11.2016-4.11..2016

Event: Quiz competition

Association: IEI

Coordinator: Ms. Priyanka Bansal

Report: The Competition was organized for all semesters and branches of Faculty of Engineering and Technology. The students were quizzed on Current Affairs,Basics of Electronics, Computing and Mathematics. After the initial screening, 10 teams were shortlisted for the Semi finals. In the semi final round each of the 10 teams were asked questions related to Physics, Chemistry, Basics of Electrical and Electronics Engineering, Basics of Computer Engineering and Basics of Mechanical Engineering. 10 teams were further reduced to five teams for the Final round.

Date:23.1.2017

Event: Workshop- FPGA

Association:

Coordinator: Ms. Jyoti Verma

Report: The Workshop was organized for ECE Students to enhance their knowledge on Field Programmable Gate Arrays and provide them hands on training on ALTERA.
Reprogrammable silicon also has the same flexibility of software running on a processor-based system, but it is not limited by the number of processing cores available. Unlike processors, FPGAs are truly parallel in nature, so different processing operations do not have to compete for the same resources.

Date:31.1.2017

Event: Project Demonstration

Association: Club

Coordinator: Dr. Vimlesh Singh

Report: The event comprised of students showcasing their projects that were designed in various domains of Electronics and Communication. Chief Guests for the event were, Dr. M.K. Soni (Executive Director & Dean, FET) and Dr.Dipali Bansal (HOD).Over 40 minor projects from different domains were presented by students.On the basis of presentation best 12 projects were appreciated by the Chief Guest.

Date: 22.2.2017

Event: CODEJAM - SAP ERP, SAP HANA Cloud Platform

Association: SAP

Coordinator: Ms. Ila Chaudhary & Mr. Deepak Dhingra

Report: Collaboration with SAP University Alliance to set up SAP Next Gen Lab at Manav Rachna Campus. CODEJAM event was conducted with over 40 participants from different domains. Sessions/Problems on HANA platforms were given to students.

Date: 2.3.2017-4.3.2017

Event: Workshop - Big Data, Cloud Computing and Android

Association: IIHT Institute

Coordinator: Ms. Jyoti Verma

Report: The Workshop was conducted for students of 4th and 6th Semester where in they were taught the basics of CCNA like IP addressing, Subnet Mask, various Routing protocols, MCP basics which included DNS, DHCP and basics of Cloud which included introduction to Microsoft Azure.

Date: 27.3.2017

Event: Technical Poster Presentation

Association: Institution of Engineers India

Coordinator: Ms. Priyanka Bansal &
                 Dr. Vimlesh Singh

Recourse Person from IEI: Er. J.P Dutta

Report: Total 97 students displayed their posters on various emerging topics of Electronics & Communication domain.

1st prize winner: Pradeep Yadav, Dishant Singh, Mohit Grover;Topic:Intelligent Chair

2nd prize winner: Zerin, Satender, Abhishek; Topic:Breast cancer detection by antenna

3rd prize winner(1): Suman Kanti Mandal; Topic:Mind controlled Computer

3rd prize winner(2): Shivam Sharma; Topic:Automated ultrasonic RADAR

3rd prize winner(3): Sujeet Soni , Topic:Quadcopter

Consolation prize winner: Ranjit Singh Rana, Apporv, Harmesh; Topic:Energy Harvesting by Piezoelectric Material

Date: 27.3.2017

Event: Workshop- SAP Ecosystem awareness

Association: SAP

Coordinator: Ms. Ila Chaudhary & Mr. Deepak Dhingra

Report: One day SAP Ecosystem Awareness was organized.
Over 140 Students across MREI participated in a Quiz that was conducted based on questions on ERP and its APPLICATIONS.

Founder's day celebration 3-4 April 2017

Date:3.4.2017-4.4.2017
Event: Workshop- 3D Printing
          Workshop- Virtual reality, Robotics & Robo Soccer
          Seminar- Behavioral Talk
Association: Tech B Pvt. Ltd
Coordinator: Dr. Abhiruch Passi (Introduction to Fibre to Home)
              Mr. Ashish Vats (Robotics & Robo Soccer)
              Dr. Vimlesh Singh & Ms. Priyanka Bansal (VVTalk)
Report: Fibre to Home (FTTX Connect) a workshop By Reliance Jio where the students were given hands on training on how to lay down fibres and cables. Best Run Business Run SAP a workshop was conducted by Ms. Ila and Mr. Deepak Dhingra on the benefits of joining SAP. A Workshop on Behavioral Skills was conducted by V V Talks where motivational talk was given by Mr. Sanjay Miglani. The Workshop was coordinated by Dr. Vimlesh and Ms. Priyanka. A Workshop on Virtual Reality was held for the students by Grey Kernel Technologies to give them an overview on Virtual Reality. The event was coordinated by Ms. Pratima and Ms. Shaveta. A workshop on 3 D Printing was held for the students by TechB Private Limited. Various models were developed and students got an idea how to design using 3 D printing machine.

Workshop: Learn & Earn

Date: 2.2.2017 - 8.2.2017
Event: Workshop- Optical fiber and communication   for FTTX Home connect
Association: Reliance JIO
Coordinator: Mr. Kapil Parmar
Report: Fibre to Home (FTTX Connect) a workshop By Reliance Jio where the students were given hands on training on how to lay down fibres and cables.

FTTH Lab Set up at MRIU

Glimpse of Training

Research Publication by Faculty

Comparison of OFDM System in Terms of BER using Different Transform and Channel Coding
Pratima Manhasa & Dr M.K Soni

Abstract-Orthogonal frequency division multiplexing is a type of multicarrier modulation technique which is used in wireless communication. OFDM can be used in various wireless and wired application such Digital audio broadcasting, digital video broadcasting & wireless LAN. The Performance of OFDM system depends on various parameters such as using different transform, different modulation and by putting various channel coding. In this paper OFDM system is modeled by using different transform (DWT/FFT), different modulation (BPSK, QPSK, QAM) and different channel coding (Linear / Cyclic block codes) for AWGN channel. The performance parameter is calculated as Bit error rate (BER) for various transform/modulation/channel coding based OFDM systems. MATLAB Simulink tool is used to calculate the bit error rate (BER).

For More Detail: http://www.mecs-press.org/ijem/ijem-v6-n1/IJEM-V6-N1-3.pdf

A Review on Wireless Body Area Network (WBAN) for Health Monitoring System: Implementation Protocols
Savita Sindhu, Dr. Shruti Vashist & Dr. S K Chakarvarti

Abstract-As in the present era use of wireless networks is increasing day by day and the electrical devices are getting smaller; both factors expand the research area of Wireless Body Area Networks(WBAN).The devices used in WBAN can record various physiological parameters like the body temperature, the BP or to take ECG, EEG, etc. With the use of WBAN, a patient experiences a greater physical mobility. The patients need not stay longer in the hospital as WBANs are placed on the human body and often transport private data; Security is considered as an important issue. It will in turn increase the quality of patient care and the productivity of hospital staff. Field of Wireless Body Area Networks comes up as a major research area in past few years as it is beneficial in health monitoring even in remote areas and patient's care can be done in real time. However, if the security of patient's data is concerned with WBANs, design issues should be taken care of. In the present paper, a short review on various aspects of Wireless Body area Network, various implementation techniques and MAC protocols are discussed. The technique which is best suited to the user is also presented.

For More Detail: http://www.caeaccess.org/research/volume4/number7/sindhu-2016-cae-652130.pdf

Medical Image Registration using Cauchy-Schwarz Inequality via Template Matching
Sunanda Gupta, Dr.S. K. Chakarvarti, & Dr. Zaheerudin

Abstract-Template matching is one of the areas of profound interest in image processing and is a technique in digital image processing to find small parts of an image which matches a template image. Template can be considered a sub image from the reference image, and the image can be considered as a sensed image. The objective is to find the measure of the degree of similarity between an examined image and template, and it establishes the correspondence between the examined image and template image. In this paper, an algorithm providing normalized cross correlation (NCC) for template matching is developed and implemented using MATLAB. The experimental results are presented and found that proposed algorithm is a robust method for the similarity measure.

For More Detail: http://paper.uscip.us/ajac/AJAC.2016.1002.pdf

Novel Reversible DS Gate for Reversible Logic Synthesis
Shaveta Thakral & Dipali Bansal

Abstract—Reversible logic has various applications in fields of computer graphics, optical information processing, quantum computing, DNA computing, ultra low power CMOS design and communication. As our day to day life is demanding more and more portable electronic devices, challenging focus on technology is demanding great system performance without any compromise in power consumption. It is obvious to find tradeoff between processing power and heat generation. As decreased processing speed leads to reduced power consumption but obviously compromise in performance is not acceptable for sophisticated applications. Thus power consumption is a prime target now days. Needless to say, researchers will now look at reversible logic in this vein. Primitive component of reversible logic synthesis are reversible logic gates .Thus it is very important for a new researcher to look into extensive literature survey of reversible logic gates. Many papers have been reported with review of reversible logic gates. This paper aims on updates in reversible logic gates and propose a novel reversible DS gate which will be stepping stone in design and synthesis of any complex reversible logic based synthesis.

For More Detail: http://www.mecs-press.org/ijmecs/ijmecs-v8-n6/IJMECS-V8-N6-3.pdf

Design of Microwave Antenna for Hyperthermia System
Minu Sethi & Dr. Geeta Nijhawan

Abstract-Hyperthermia is a thermal therapy for cancer treatment in which body temperature is exposed to elevated temperature of 40 42oC. Microwave ablation has a potential to be sensitive to changes in the dielectric tissue parameters which results in damaging abnormal tissues. In order to produce heat in the focused area microwave signals are adjusted in time, frequency and strength. The commonly used frequencies in microwave imaging systems are 415MHZ and 2.45GHZ which are transmitted from the antennas enclosing the relevant body part. This paper presents a highly efficient E-Shape micro strip patch microwave antenna operated at 2.45 GHz which can be used in various applicators for hyperthermia treatment system. The simulation is done on IE3D simulator. The results are compared at two feeding points 1 and 2 for the frequency 2.45GHZ. It gives return loss of -19.3dB, bandwidth of 6.2dB and the antenna efficiency of 92% for feeding point 1 which proves to be highly effective in communication.
For More Detail: http://www.mecs-press.org/ijwmt/ijwmt-v6-n4/IJWMT-V6-N4-4.pdf

A real-time acoustic signature-based fluid identification methodology for applications in the field of security and defence
Ms. Shweta Singh & Dr.Dipali Bansal

Acoustic-based inspection methods, employed for on field screening of containers, hold high importance in the fields of security and defence. However, such methods are limited by expensive instrumentation, offline analysis and complexities related to transducer container physical coupling. Simple, non destructive and extremely cost effective method based on acoustic resonance has been devised here for rapid online acquisition and analysis of acoustic signatures of fluids for their necessary identification and classification. The research, with two stages of experimentation, establishes reliability of the system in the first stage by using sweep excitation in fluids followed by acquiring acoustic signatures for such fluids in the second stage by using white noise for excitation. The setup uses two ceramic coated piezoelectric transducers interfaced with the computer through audio ports. Excellent consistency in the results, recorded with the help of a virtual spectrum analyzer, is achieved with average error amounting to 1.4%.
For More Detail: https://www.inderscienceonline.com/doi/abs/10.1504/IJESMS.2016.079413

Vertical Handoff with Predictive Received Signal Strength in Next Generation Wireless Network
Jyoti Madaan & Dr. Indu Kashyap

Abstract—Since the last few decades, tremendous innovations and inventions have been observed in every field, but especially in wireless network technology. The prevailing demand curves and trends in this particular area of communication show the importance of real-time multimedia applications over several networks with guaranteed quality of service (QoS). The Next Generation Wireless Network (NGWN) consists of heterogeneous wireless networks that will grant high data rate and bandwidth to mobile users. The primary aim of Next Generation Wireless Network (NGWN) is to conceal heterogeneities and to achieve convergence of diverse networks to provide seamless mobility. So that mobile user can move freely between networks without losing the connection or changing the setting at any moment. When the mobile user moves between different networks, there is a requirement to handover the channel, from one network to another by considering its services, features and user preferences. Channel handover between two different networks is done with the help of vertical handoff (VHO). In a heterogeneous environment, numerous technologies co-exist with their unique characteristics. Therefore, it is very difficult to design efficient handoff decision algorithm. The poorly designed handoff algorithm tends to increase the traffic load and, thereby tend to dramatic decrease in quality of service. A mobile node equipped with multiple network interfaces will be able to access heterogeneous wireless access network. But the availability of alternatives give rise to a problem of unnecessary handoff. To avoid this, we have proposed a decision algorithm based on predictive received signal strength, hysteresis margin and dwell time to select an optimum target network. The handoff policies are designed using received signal strength (RSS), available bandwidth, service cost, user preference, type of application and network condition to reduce the number of handoffs, decision delay, probability of handoff failure and probability of unnecessary handoff. We have also made a comparative analysis of various vertical handoff decision algorithms in this paper
For More Detail: file:///C:/Users/tcs/Downloads/An%20Overview%20of%20Vertical%20Handoff-133.pdf

Vertical Handoff Decision Algorithm Based on PRSS and Dwell Time
Jyoti Madaan & Dr. Indu Kashyap

Abstract—Next generation wireless network (NGWN) is a mixture of various heterogeneous technology. It allows the global information access to the user while moving from one network to another. The challenging issue in NGWNs to design an intelligent vertical handoff decision algorithm beyond traditional one. The traditional algorithms are based on signal strength only to determine the right time and right network. But, these algorithms have a large number of unnecessary handoff due to fluctuating RSS. Although, the number of unnecessary handoffs can be reduced by an RSS with hysteresis margin scheme. But these algorithms increases the risk of high dropping and low utilization. Therefore, the aim of our research is to develop a vertical handoff decision algorithm that can select an optimum target network based on bandwidth requirement, battery power, cost of service, network performance and network condition. By the implementation of our algorithm, we can provide a mechanism that can select the best network at the appropriate time and provides the uninterrupted services to mobile users, that allows connectivity between universal mobile telecommunication system (UMTS) and wireless local area network (WLAN). The inclusion of hysteresis margin and dwell time in predicted RSS helps in reducing the early handoff, ping pong effect, decision delay and utilization rate.
For More Detail: http://www.mecs-press.org/ijcnis/ijcnis-v8-n8/IJCNIS-V8-N8-4.pdf

Design and Analysis of triple band notched microstrip UWB antenna
Ms. Heena Choudhry, Mr.Tejbir Singh, Mr. Kunver Arif Ali, Mr.Ashish Vats, Mr. Pawan Kr.Singh, Mr. D.R.Phalswal and Mr. Vishant Gahlaut

Abstract-In this paper, a compact ultra-wideband (UWB) antenna with triple notch bands is proposed. By etching out two ESRR of different dimensions in the radiating patch, two band notched properties in the WiMAX (3 –3.7 GHz), WLAN (5.125– 5.825 GHz) are obtained. Furthermore, by placing SIR near the feed line–patch junction of the antenna, band notch property for the 7.9–8.4 GHz (X-band) frequencies is achieved. Design guidelines for implementing the notch bands at the desired frequency regions are provided. The notched frequencies can be adjusted according to specification by altering the parameters of the ESRR and SIR. The effects of the key design parameters on band notch characteristics are also investigated. The realized antenna achieved an operating bandwidth (VSWR < 2) ranges from 2.94 to more than 11.3 GHz with triple notched bands of 3.0– 3.7, 5.2–6.1, and 7.9–8.7 GHz. The proposed antenna is well designed and extensively investigated. The experimental results are given to verify that the proposed antenna with a wide bandwidth, three designated band notched function which is suitable for modern high data rate UWB communication applications. The maximum simulated gain of the antenna is around 10.02 dBi with an average efficiency above 82.2% throughout the bandwidth.

For More Detail: https://www.cogentoa.com/article/10.1080/23311916.2016.1249603

Design, Modelling and Implementation of Variable FFT Processor
Romika Choudhary & Ashish Vats

Abstract-the research paper focuses on the Design, Modeling and Implementation of Variable FFT Processor. FAST Fourier transform (FFT) is a main block in orthogonal frequency division multiplexing (OFDM) and Orthogonal Frequency-Division Multiple Access (OFDMA) systems. OFDM has been adopted in a wide range of applications from wired communication modems, such as wireless-communication modems, Wi-Fi, IEEE802.16, Wi-MAX or 3GPP long term evolution (LTE), digital subscriber lines (xDSL), to process baseband data. In the paper first the design is carried for 8 point FFT and further it is used to implement variable FFT processor. The design is developed with the help of VHDL programming language and synthesized on Virtex-5 FPGA in Xilinx 14.2 software and functional simulation is done in Modelsim 10.1.

For More Detail: https://www.ijirset.com/upload/2016/june/227_Design.pdf

Comparison of OFDM System in Terms of BER using Different Transform and Channel Coding
Pratima Manhasa & Dr M.K Soni

Abstract-Orthogonal frequency division multiplexing is a type of multicarrier modulation technique which is used in wireless communication. OFDM can be used in various wireless and wired application such Digital audio broadcasting, digital video broadcasting & wireless LAN. The Performance of OFDM system depends on various parameters such as using different transform, different modulation and by putting various channel coding. In this paper OFDM system is modeled by using different transform (DWT/FFT), different modulation (BPSK, QPSK, QAM) and different channel coding (Linear / Cyclic block codes) for AWGN channel. The performance parameter is calculated as Bit error rate (BER) for various transform/modulation/channel coding based OFDM systems. MATLAB Simulink tool is used to calculate the bit error rate (BER).

For More Detail: http://www.mecs-press.org/ijem/ijem-v6-n1/IJEM-V6-N1-3.pdf

Biotemplates and Their Uses in Nanomaterials Synthesis: A Review
Varsha Singh & Dr. S.K.Chakarvarti

Abstract: Nature has provided great sophisticated highly ordered nanostructures. Such ordered hierarchical structures are not easy to fabricate through highly advanced technologies or methodologies present. So researchers have interest in exploring natural biological materials which are not only responsible for creating exact replica of their highly ordered morphologies but also provide nanomaterials with improved properties like controlled size, crysallinity and their surface chemistry. This review article presents overview on biotemplates whose well defined architectures and organizations are useful for synthesizing nanomaterials of different dimensions. This review emphasis on the biotemplates explored to date in terms of their origin and structure and the methodologies used for the synthesis of nanostructures.

For More Detail: http://paper.uscip.us/aibebt/aibebt.2016.1001.pdf

Research Publication by Student

Compacting Biogas Digester for Installation in the Backyard
Neena Ahuja, Dr. Dipali Bansal and Mr. Khwaja M Rafi Bansal

Abstract-This paper attempts to bring the concept of a Biogas Power Plant in ones backyard a reality. An analysis of feasible anaerobic systems ; Single stage, two stage and BTA style multistage systems have been compared with the objective of reducing the total volume of space occupied by biogas reactors. Although people in various countries across the globe have installed biogas dige sters for gas as well as electricity purposes in their backyard, biogas is being generated in such reactors at its inherent rate depending on the environmental factors and the substrate used. A method needs to be devised that would increase the yield of methane in these home scale reactors so that the size of the digesters could be reduced and the amount of energy obtained from them increased. Though the technique of splitting up the biogas formation into two- hydrolysis and acidogenesis phase as the first phase and methanogenesis as the second phase has been exploited on the larger scale, it still remains largely unexploited in the smaller version. The total volume occupied by a BTA style digester was 3. 9 times lower than a two stage digester and 7. 7 times lower than a single stage digester while a two stage process combined reactor volume occupied half the space occupied by the single stage anaerobic digester for the same amount of power generated while the storage space occupied remained the same. The results obtained will serve as the base for design of experiment for compacting home based biogas digestion systems.

For More Detail: https://www.ripublication.com/ijaer16/ijaerv11n9_25.pdf

Temperature Control for Sustained Microbial Activity in Anaerobic Biogas Digesters
Neena Ahuja, Dr. Dipali Bansal and Mr. Khwaja M Rafi

Abstract-Exhaust gases from biogas powered internal combustion engine coupled to an alternator with temperature in the range of 450 to 650oC can be utilized to maintain biogas digester temperature at the desired operating point for the optimized activity of anaerobic methanogenic bacteria in locations experiencing varied temperatures throughout the year. Charts designed would provide handy information on the time interval for which the gases need to be introduced into the digester to maintain 37oC temperature within it by mathematical analysis. For every kilogram of digester slurry exhaust gases at 600oC are required to be introduced into the digester through boiler tubes of surface area 0.1 m2 for 1.03 seconds for initially raising the digester's temperature to the set 37oC temperature, followed by a second gas introduction period of 0.0044 seconds to account for the heat lost to the outer digester surface and later for 0.0046 seconds every 7.6 seconds to compensate for the heat lost to the air outside the digester for the region of Faridabad in the month of January with a normal temperature of 14.3 o C. This exercise will provide help for the designing, engineering and commissi oning of heating systems for varied sizes of biogas plants.

For More Detail: http://www.iioab.org/articles/IIOABJ_7.11_60-67.pdf

Design of 64bit High Speed Vedic Multiplier
Ila Chaudhary & Deepika Kularia Dutta

Abstract - A multiplier is one of the key hardware blocks in most digital signal processing (DSP) systems. Typical DSP applications where a multiplier plays an important role include digital filtering, digital mmunications and spectral analysis. Many current DSP applications are targeted at portable, battery-operated systems, so that power dissipation becomes one of the primary design constraints. Since multipliers are rather complex circuits and must typically operate at a high system clock rate, reducing the delay of a multiplier is an essential part of satisfying the overall design.. This paper puts forward a high speed multiplier ,which is efficient in terms of speed, making use of UrdhvaTiryagbhyam[1], a sutra from Vedic Maths for multiplication and half adder for addition of partial products. The code is written in VHDL and results shows that multiplier implemented using Vedic multiplication is efficient in terms of are a and speed compared to its implementation using Array and Booth multiplier architectures.
For More Detail: https://www.ijareeie.com/upload/2016/may/114_Design.pdf

To Design and Develop a Quarter-Circle Shaped Patch Antenna with Triple Notched Band Functions
Ruchika Singh, Romika Choudhary & Ashish Vats

Abstract—The proposed microstrip antenna consists of a feed structure, a trapezoidal ground plane and a quartercircle shaped radiating patch with grooved slots on it, these structures are printed on a thin substrate with dielectric constant of 4.4. The three notch band functions are studied by incorporating the use of the four slots (two slots are of rectangle shape and the other two slots are of Tshape), while the electronic switches are used to activate and deactivate these cut slots from the radiating patch to obtain the notched bands. By using this technique, the proposed antenna can filter out unwanted narrowband signals from the three notched bands, these notched bands range from 8.3Ghz-9.7Ghz,5.1Ghz-6.3Ghz and 9.3Ghz-10.7Ghz.These notched bands have various applications and hence the interference from the above bands can be easily avoided. The proposed quarter-circle shaped patch antenna device is designed and its behavior is well observed. The simulated results are shown to verify that the proposed microstrip antenna covers the ultrawide band range i.e, 3.1 GHz-10.6 GHz and has three bands reject characteristics because of which this antenna is suitable for various UWB communication applications.

For More Detail: http://ijirae.com/volumes/Vol3/iss6/07.JNAE10085.pdf

Performance of DCO-OFDM in Optical Wireless Communication System
Sakshi Verma & Dr. Shruti Vashist

Abstract- OFDM scheme is widely adopted as it has high data rate and good performance under various channel conditions. In this paper, a number of unipolar optical OFDM scheme has been used for IM/DD system using simulink. To develop such a complex system, this paper proposes MATLAB as the platform for its implementation. The modeling of block diagram is done using Fast Fourier Transform and Hermitian symmetry. The concept of Optical OFDM uses LED at the transmitter and Photodiode at the receiver to demonstrate the optical characteristics of the system. The model has been implemented using different modulation techniques and under various channels. The paper suggests that using QPSK modulation in white Gaussian noise with 5dB SNR gives best result in terms of BER. Similarly, DBPSK modulation technique performs better with the increase in fading frequency. Thus, the complete model description suggests novelty in the modulation schemes that can be accepted for channels applicable in optical OFDM communication.

For More Detail: http://ijirae.com/volumes/Vol3/iss6/14.JNAE10100.pdf

Performance Analysis of OFDM system using LS, MMSE and Less Complex MMSE in terms of BER, SNR and MSE
Shobit Baluni & Pratima Manhas

Abstract: In this research, Channel estimation has been accomplished for OFDM framework. In wireless communication, because of a nonappearance of channel estimation a decent execution of communication doesn't accomplish. Also, it is critical for wireless communication that transmission of information at high rate and transmission with least mistake could conceivable. Such a variety of times in remote correspondence, abundance of a sign get vacillated. This variance influences the execution of wireless communication. So to beat these issues channel estimation is essential. In channel estimation pilots get joined with transmitting information, and this consolidated data goes through channel and reaches at recipient. At accepting side estimation get perform with the assistance of those pilots. OFDM have a significance in remote correspondence as OFDM gives high rate of data, additionally it gives low multipath contortion, these properties are essential to increase great execution of remote correspondence. This is motivation to choose OFDM in this study. This concentrate essentially thinks about three distinct calculations for divert estimation in OFDM framework. Likewise this study contrasts these calculations and traditional OFDM. This study utilizes comb type pilot insertion method, and this procedure is extremely valuable to diminish the impact of fast fading in wireless communication environment.

For More Detail: http://ijirae.com/volumes/Vol3/iss6/13.JNAE10096.pdf

Analysis of Multi-Band Characteristics of Fractal Shape Antenna
Priyanka Karhana & Dr.Vimlesh Singh

Abstract - This paper put forward the relative study of rectangle shaped Microstrip patch antenna for two different dielectric substrate. If the substrate material's dielectric constant is escalated, resulting in shrinking /depression of patch antenna. This depression of coordinate is result of back-and-forth in efficiency, bandwidth and impedance. FR4 and RT- Duroid are considered for determine the performances. Feeding technique used is coaxial probe-feed. Measurement like feed-point coordinates, width, length, and ground measurement for each substrate is determined. The model of antenna is performed using the Method of Moments based on IE3D Simulator from Zeland Software Inc, USA.

For More Detail: http://ijirae.com/volumes/Vol3/iss6/18.JNAE10102.pdf

THE ELECTRON
Discovering Knowledge

A Triple Band Notched Reconfigurable Micro strip Fed UWB Applications Antenna
Altaf Sharief &Ashish Vats

Abstract---In this paper a compact ultra wide band (UWB) triple band notched reconfigurable micro strip antenna is proposed. The bands 2.6GHZ-3.11GHZ (WIMAX) and 5.0GHZ-5.6GHZ (WIFI) and 7.4 -8.6(C BAND) are notched from the antenna operating frequency. The triple band notched antenna is designed by itching two slots having different shapes on the radiating patch. One slot is of T shaped and the other slot is of rectangular shaped. Design specifications for notching the desired bands are provided. T he results are simulated using HFSS and compared with the experimental results which suggest that the antenna can be used very efficiently in the UWB range without much interference.

For More Detail: http://ijirae.com/volumes/Vol3/iss6/06.JNAE10084.pdf

Facial Expression Recognition Using Local Binary Pattern and Support Vector Machine
Nivedita & Dr.Geeta Nijhawan

Abstract— Facial expression analysis is a remarkable and demanding problem, and impacts significant applications in various fields like human-computer interaction and data -driven animation. Developing an efficient facial representation from the original face images is a crucial step for achieving facial expression recognition. Facial representation based on statistical local featur es, Local Binary Patterns (LBP) is practically assessed. Several machine learning techniques were thoroughly observed on various databases. LBP features- which are effectual and competent for facial expression recognition are generally used by researchers Cohn Kanade is the database for present work and the programming language used is MATLAB. Firstly, face area is divided in small regions, by which histograms, Local Binary Patterns (LBP) are extracted and then concatenated into single feature vector. This feature ve ctor outlines a well-organized representation of face and is helpful in determining the resemblance among images.
For More Detail: http://ijirae.com/volumes/Vol3/iss6/17.JNAE10099.pdf

Impact of Fin Dimensions on Performance of Adder and Subtractor
Rahil Kumar, Kanika Sharma & Ravi Goel

Abstract— The FinFET architecture has emerged a viable contender for the ultimate scalability of CMOS devices. FinFET structure offers better control over device leakage currents than the conventional bulk MOSFET structure. In this work the adder and subtractor implementation using 30 nm technology. The figure of merit measure for adder and subtractor are power and delay. Based on the simulation results, it is found that the fin thickness (Tfin), fin height (Hfin) are very important deciding factor for power and delay. There is a phenomenal increase in short channel effects when the fin dimensions are increased. From the simulation average power is calculated for the variation in Hfin for full adder and full subtractor to 34% and 24 % when the height of fin is minimum while in case when height is maximum the average power of full adder and full subtractor is increased to 51% and 26% respectively. On the other hand power increases 14% and 16% when Tfin is maximum for full adder and subtractor respectively. And when Tfin is minimum power reduces to 21% and 24% respectively. Delay calculation for different values of Hfin for full adder and full subtractor is 17 % and 16% increase in delay when Hfin is minimum.while for maximum value of Hfin delay is reduced to 58% and 27% respectively. Similarly delay for full adder and full subtractor is 13% and 10% increase when Tfin is minimum and for maximum values of Tfin delay reduces to 10% and 15% respectively.
For More Detail: https://www.ijareeie.com/upload/2016/june/59_Impact.pdf

Design and Implementation of Low Power 3-Bit Flash ADC Using 180nm CMOS Technology
Neha & Amana Yadav

Abstract— Analog-to-digital converter has become a very important device in today's digitized world as they have a very wide variety of applications. Among all the ADC's available, the Flash ADC is the fastest one but a main disadvantage of Flash ADC is its power consumption. So, this paper aims at implementing a low power high speed Flash ADC. A-3 bit Flash ADC has been designed using CMOS technology. A two stage open loop comparator and a priority encoder have been implemented using which the ADC has been designed. All the circuits are simulated using 180nm technology in Tanner EDA environment. The supply voltage Vdd is 1.8v.Analog output of each comparator depending upon the comparison between the input and the reference voltage is fed to the encoder and finally the compressed digital output is obtained. The power dissipation of each circuit implemented is calculated individually including other parameters like are, resolution gain and speed.
For More Detail: http://www.ijera.com/papers/Vol6_issue6/Part%20-%203/M0606037782.pdf

Security Breaches in Trust Management Schemes in Mobile Ad-Hoc Networks
Bindiya Bhatia , M. K. Soni and Parul Tomar

Abstract- A Mobile Ad-Hoc Network allows distributed decision making by letting every node to take part in a routing decision. In this decision making the trust can play an important role. Establishing a trust among nodes is considered to be an influential tool to protect the wireless network. The nodes in the network can communicate with each other by building an acceptable level of trust relationships among themselves. But the trust management schemes themselves can be vulnerable to attacks. Trust Propagation and trust management in order to establish a trust, update a trust and revocation the trust is more challenging in a resource constrained MANET as compared to other traditional communication networks due to the dynamic topology change, mobility, conditions of propagation channels. In MANET, a malicious node can cause significant data damage and adversely influence the quality of the data. Thus, trust level analysis of a device can impact the certainty with which a device conduc ts data exchange with other device. The uncertainty and incompleteness of the trust evidence can be derived due to the dynamic characteristics of MANET. This paper is intended to pioneer the benefits of trust in MANET, investigate the various trust management schemes developed for MANET putt ing forward the summary of these techniques and the vulnerabilities associated with the trust management. The paper highlights the potential attacks and their impact on trust management in MANET.

For More Detail: http://www.journalijar.com/current-issue/?mn=06&yr=2017&Ln=upload

Optimized OFDM Model Using CMA Channel Equalization for BER Evaluation
Pratima Manhas & M.K Soni

Abstract- Orthogonal Frequency Division Multiplexing (OFDM) is a type of Multicarrier Modulation (MCM) technique in which entire bandwidth is divided into large number of small sub carriers and each subcarrier is transmitted parallel to achieve higher data rates. It has various applications like Digital Audio Broadcasting (DAB), Digital Video Broadcasting (DVB) and wireless LAN.OFDM technique is widely used in wireless communication system because of its very high data rate. The performance of FFT based OFDM system using Linear and cyclic channel coding and Constant Modulus Algorithm (CMA) equalizer is simulated using simulink model. The BER saving using the optimized proposed model with both linear and cyclic channel coding along with CMA equalizer is evaluated. The proposed work using cyclic channel coding with QPSK/QAM modulation and CMA as channel equalization under AWGN channel results in 52.6% and 96.3% BER reduction as compared to conventional OFDM model without channel coding, channel equalization and channel fading. So, CMA equalizer is used to enhance the performance of OFDM system.

For More Detail: DOI: 10.11591/eei.v6i2.614 Scopus(Elsevier)

A novel approach for intensity based non-rigid image registration using Powell's algorithm
Sunanda Gupta; Naresh Grover & Zaheeruddin

Abstract- In this paper, an approach to medical image registration using Powell's algorithm with a basic concept from mutual information, & entropy, as a new matching criterion is presented. This approach uses histogram equalised reference image and target image. Volume control points of these enhanced images determine the quality of image registration. Based on these volume control points, features like location, edge pixel intensity strength & orientation are considered to compute a joint probability distribution of corresponding edge points from reference and target images. Then mutual information based on this function is minimised to find the best alignment parameters and the translation parameters are calculated using Powell's algorithm and matched to perform image registration. The proposed registration algorithm is faster, robust & proved to be more efficient than the ACO approach quantitatively. Simulations for Powell's algorithm using enhanced images of the same size but with different angles are shown here.

For More Detail: http://dx.doi.org/10.1504/IJBET.2017.10005684

A Robust Approach for Medical Image Enhancement using DTCWT
Gagandeep Kaur & Shruti Vashist

Abstract- Image Enhancement is one of the most important features in Image processing domain whose main target is to improve with the help of which contrast and the visual appearance of an image can be improved that makes the input image more suitable than the original one for specific application. Medical Image enhancement is the active research field. A novel approach to enhance resolution of medical images using Dual tree complex transform, a filter and singular value decomposition (SVD) has been discussed. Here, SVD is proposed to enhance the contrast of an image while high frequency sub bands are produced using dual-tree complex wavelet transform. Filter is used to remove the artefacts produced by dual tree complex wavelet transform. Interpolated filtered high frequency sub-bands and contrast enhanced low resolution image are combined using inverse dual tree complex wavelet transform to obtain contrast enhanced image of super resolution. Qualitative and quantitative measures are used to justify the importance of proposed technique.

For More Detail: www.ijcaonline.org/archives/volume167/number6/kaur-2017-ijca-914316.pdf

Vulnerability Analysis of Mobile Agents Praxis in Mobile Ad-Hoc Networks
Bindiya Bhatia, Dr. M.K. Soni & Dr. Parul Tomar

Abstract- In the emerging world, in a resource constrained network like mobile ad hoc network, the mobile agent is becoming a favorable option for creating applications like service discovery, network discovery, automatic network reconfiguration etc due to its astonishing features like autonomy and mobility. The joint venture of the two technologies mobile agent and mobile ad hoc network is contributing towards an ameliorate communication. There are diverse issues that are associated with mobile ad hoc networks like the unexpected change in topology, mobility, power constraint, bandwidth limitation etc. A mobile agent is one of the solutions to conquer these challenges. A mobile agent interacts with the node in a better way and provides enhanced options for the developers to design applications based on the disconnected network. Although mobile agents take advantages over the general client-server applications, still, the mobile agents are at high security risks due to its mobility and autonomy. The various security solutions are there to secure the mobile agents. But not all the security solutions precisely work in the mobile ad-hoc network because the network is unpredictable and subject to dynamic change in topology. The paper intends to review the vulnerabilities associated with mobile agents when applied in the mobile ad-hoc networks and studies the various approaches to overcome the risks associated with mobile agent.

Comparative Study of Medical Image Contrast Enhancement using Discrete Wavelet Transform and Dual Tree Complex Wavelet Transform
Gagandeep Kaur, Shruti Vashist

Abstract-Image Enhancement is one of the most important preprocessing technique in image processing technology that leads to improvement of contrast and visual appearance of an image to make the original image more appropriate for specific application. Medical image enhancement is the area of active research. Many techniques have already been proposed and implemented for enhancement of digital images for their specific application domain, wavelet transform is found as one of them that has been proved very simple and effective, which is a multiresolution analysis of an image using a set of analyzing functions that are dilations and translations of a few functions. Discrete Wavelet Transform (DWT) and Dual Tree Complex Wavelet Transform (DTCWT) are most popular techniques for medical image enhancement. DTCWT has been found better than DWT due to its properties like shift invariance, less aliasing and better directionality than DWT. These properties play an important role in biomedical image enhancement. For these reasons, to obtain some improvements in clinical diagnosis and pathological applications, DWT is replaced by Dual tree complex wavelet transform. Experimental results are presented to illustrate the comparison of DWT and DTCWT to a set of medical images.

Performance of OFDM System under Different Fading Channels and Channel Coding using Matlab Simulink
Pratima Manhas & M.K. Soni

Abstract-Orthogonal frequency division multiplexing (OFDM) is a type of multicarrier modulation (MCM) technique in which larger bandwidth is divided into parallel narrow bands each of which is modulated by different subcarriers. All the subcarriers are orthogonal to each other and hence it reduces the interference among various subcarriers. OFDM technique is an efficient modulation technique used in certain wired and wireless application. In a wireless communication channel, the transmitted signal can travel from transmitter to receiver over multiple reflective paths. This results to multipath fading which causes fluctuations in amplitude, phase and angle of arrival of the received signal. For example, the signal which is transmitted from BTS (base transceiver station) may suffer multiple reflections from the buildings nearby, before reaching the mobile station. Such multipath fading channels are classified into slow fading/fast fading and frequency-selective/flat fading channels. This paper discusses the performance of OFDM system using various fading channels and channel coding. The parameter which is known as Bit error rate (BER) is calculated under different fading channels (AWGN, Rayleigh and Rician) for different digital modulation (BPSK, QPSK and QAM) and Channel coding (linear/Cyclic coding). Matlab Simulink tool is used to calculate the BER parameter.

OFDM System Performance Evaluation under Different Fading Channels (AWGN, Rayleigh and Rician) and Channel Coding using Matlab Simulink
Pratima Manhas & M.K. Soni

Abstract-Orthogonal Frequency Division Multiplexing (OFDM) is a form of Multicarrier Modulation (MCM) technique in which larger bandwidth is divided into parallel narrow bands each of which is modulated by different subcarriers. All the subcarriers are orthogonal to each other and hence it reduces the interference among various subcarriers. OFDM technique is an efficient modulation technique used in certain wired and wireless application. During transmission, the transmitted signal can travel from transmitter to receiver over multiple reflective paths in case of wireless communication system which results to multipath fading and produces variation in amplitude, phase and angle of the received signal. The signal which is transmitted from BTS (base transceiver station) may undergo multiple reflections from the buildings nearby, before reaching the mobile station. This paper discusses the performance of OFDM system using various fading channels and channel coding. The parameter which is known as Bit error rate (BER) is calculated for different fading channels (AWGN, Rayleigh and Rician) for different digital modulation (BPSK, QPSK and QAM) and Channel coding(linear/ Cyclic coding).The tool which is used to evaluate the BER parameter is Matlab Simulink.

Design and Implementation of Wireless Body Area Network using physiological parameters
Savita Sindhu & Shruti Vashist

Abstract-Applications of e-Health deals with various physiological signals like body temperature, Blood Pressure, Electrocardiogram(ECG) captured by either wired networks or wireless sensor networks (WSN).ECG is one of the important parameter. A three lead based ECG acquisition system, body temperature; pulse rate monitoring system is presented in the paper below which can store data. The data can be sent wirelessly to the doctor fo r further analysis. The proposed design makes use of wearable sensors which will not be of discomfort to the patient. The patient can move around easily.
For More Detail: scholarpublishing.org/index.php/JBEMi/article/view/2800

BER Based Performance Analysis of 2x1 Alamouti's Diversity and 4x4 MIMO Diversity with Interleaver and Encoder for BPSK, QPSK and QAM
Jaya Dagur&Savita Sindhu

Abstract- In this paper the results are evaluated on a conventional modulation system. Here the system of communication is presented by modeling and analysis and the results so calculated are presented. The approach made in this paper is solely based on initial description which includes a combinational approach of spatial diversity well represented by OSTBC (Orthogonal Space Time Block Codes) encoder and combiner. Next the system of OSTBC encoder and combiner are put together in a MIMO(Multiple Input Multiple Output) channel using Rayleigh and Rician channel coupled with white Gaussian channel. In modeling of such systems interleavers and encoders are also used that helps to identify the performance with simple model without these techniques. In overall system the methodical approach using Multiple Input Multiple Output antenna with the modulator, encoder and interleaver is analyzed and the resultant bit error rate has been identified. The simulation platform is MATLAB and SIMULINK in which communication block sets are used. Alamouti's and 4x4 MIMO antennas are used and hence performance so evaluated is delivered. Best results are found when number of antennas increases using Interleaver and modulation or only with modulation techniques.
For More Detail: http://www.mecs-press.org/ijieeb/ijieeb-v9-n1/IJIEEB-V9-N1-6.pdf

Industrial/ Educational Visit

Current Trends in Electronics & Communication Engineering

National News

Designing chips for the world: In 2013, Sudhakar Palisetti, 47, thought it would be an ideal time to start a venture in India that would design chips for US tech giants. The two-and-a-half decade old veteran in the semiconductor industry saw that American entrepreneurial interest in the sector was dwindling. Funding deals were few. Even the number of startups being founded in the US was at its lowest. And this was happening at a time when smart phone sales were booming globally and chip demand was soaring. With some money from well wishers, he founded Cerium Systems. Today, Cerium's customers include the world's biggest chip manufacturing companies. The 400 people-strong team in India plans to hire another 200 over the next 12 months in India and another 150 in Malaysia, where Palisetti opened an office last week.

International News

Sweat-charged batteries woven into fabric: Seokheun Choi, a researcher at Binghamton University, has woven microbial fuel cells charged by bacteria into a flexible fabric which could be used for clothing. Choi's microbial fuel cells (MFCs) use bacteria to trigger reduction/oxidation reactions, which swap electrons between molecules to generate electricity. "Humans possess more bacterial cells than human cells in their bodies (3.8×1013 compared to 3.0×1013), the direct use of b acterial cells as a power resource interdependently with the human body is conceivable for wearable electronic," says Choi.

Success Story: Engineers created artificial graphene in a nanofabricated semiconductor structure

Experts at manipulating matter at the nanoscale have made an important breakthrough in physics and materials science. They have engineered "artificial graphene" by recreating, for the first time, the electronic structure of graphene in a semiconductor device. "This milestone defines a new state -of-the-art in condensed matter science and nanofabrication," says Aron Pinczuk, professor of applied physics at Columbia Engineering and senior author of the study. "While artificial graphene has been demonstrated in other systems such as optical, molecular, and photonic lattices, these platforms lack the versatility and potential offered by semiconductor processing technologies. Semiconductor artificial graphene devices could be platforms to explore new types of electronic switches, transistors with superior properties, and even, perhaps, new ways of storing information based on exotic quantum mechanical states."

Lead Story: Electronics manufacturing is making a comeback in Karnataka

"Many startups in Karnataka today are looking at manufacturing activities – and not just from Bengaluru but Mysore and Belgaum as well," said V. Manjula, Principal Secretary, Dept of IT, BT and S&T, Karnataka. "Globalisation is great, but Indian companies should not overlook local markets either," she urged. The state's Electronics System Design and Manufacturing (ESDM) policy now includes venture capital support as well, through the Karnataka Semiconductor Venture Fund (KarSemVen), which has supported six startups already to the tune of Rs 30 crore.

Snippets of

Event World Telecommunication & Information Society Day celebration

Dr. Dipali Bansal contributed a chapter of title "Emerging Technologies and ICT Solutions in Healthcare" in September 2016. Title of thebook is "Handbook of Research on Healthcare Administration and Management" published by IGI Global (USA). Research Project.

Dr. Dipali Bansal undertook a research project titled "A Cognitive Science Research Initiative on Brain Atlas in Indian Context". This project was worth Rs. 16cr. The funding was provided by DST (SERB) agency.

Motivational Quote By Dr. A.P.J Kalam

- You have to dream before your dreams can come true.

- Look at the sky. We are not alone. The whole universe is friendly to us and conspires only to give the best to those who dream and work.

- Man needs his difficulties because they are necessary to enjoy success.

- It is very easy to defeat someone but it is very hard to win someone.

- If you want to shine like a sun, first burn like a sun.

Alumni

Apart from imparting technical knowhow my college life has taught me how to balance life and how to prioritize my activities so that eventually I enjoy my life. Also for each of my dream to become a reality a sheer hard work and dedication is required. College Life taught me that opportunities just simply do not fall in our lap. We have to earn them with commitment.

Ms. Sunayana
Scientist E, DRDO

The Impact of my college extended beyond the graduation days and a college of such repute helped me in providing placement and right guidance to me. It is because of the efforts of my faculty members that has prepared me to see beyond the narrow boundaries of my own interests and also helped me move from one challenge to another.

Mr. Ishan Nagpal,
Nokia Seimens

MANAV RACHNA
vidyanatariksha

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