The Electron
Discovering   Knowledge

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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

Ms. Ritu Halder 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, and Engineering 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 prestigious 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. This Magazine will provide you with some glimpses of the all round developmental activities of the department in the last few months. We have initiated the present issue as an attempt to bring out information regarding different activities and achievements of the department. Future issues will keep you uprised 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.

Prof. (Dr.) Krishna Kant
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. It is the intent of the department to make it an annual publication to keep a track of the departmental activities and achievements. This is a platform to share information by providing your thoughts on conducting various Departmental activities or by contributing information on the events that 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

Our Achiever's 2017-2018

Academics: Dec 2017

Mr.Robin Singh	Ms.Anita Chudhary	Mr. Vishesh Tyagi	Ms.Megha Tyagi	Mr.Zerin Moirangthem
1ECA	**3ECA**	**5ECA**	**7ECA**	**7ECB**
SGPA: 8.42	**SGPA: 9.16**	**SGPA: 8.50**	**SGPA:8.46**	**SGPA: 8.80**

Our Proud Techno: Buddies

Mr. Dev Dt	Mr. Dhruv Sharma	Mr. Ishlok Vashistha	Mr. Sujeet Soni	Ms. Shubhi Saxena
7ECE	**7ECE**	**7ECE**	**7ECE**	**3ECE**

Our Proud Culture: Buddies

Mr. Yashu Meel	Ms. Diksha Bhati	Ms. Himanshi	Ms. Riddhi	Mr. Aman Tanwar
7ECE	**7ECE**	**5ECE**	**5ECE**	**3ECE**

Expert Talk/Seminar

Date:4.9.2017

Resource Person: Mr. Shivender Dahiya

Designation: Technical Head

Affiliation: Rogers Communication
Canada

Topic: Career opportunities in ECE

Beneficiary: Student & Faculty

Outcome: Mr. Shivender Dahiya share his experience to student about learning. He also suggest student how thy move ahead so that they will become a good professional as well as a good human being.

Date:25.9.2016

Resource Person: Dr. Zahheeruddin

Designation: Professor

Affiliation: Jamia Millia Islamia

Topic: Linguistic variables

Beneficiary: Student & Faculty

Outcome: Expert lecture by Dr. Zahheeruddin ,Prof Jamia Millia Islamia on the topic Fuzzy logic, Fuzzy sets, hedges and use of Linguistic variables in fuzzy logic and its applications organized for student of B.Tech ECE.

Date:8.11.17

Resource Person: Ms. Shaveta Thakral &
Ms. Prtima

Designation: Associate Professor

Affiliation: MRIIRS

Topic: Domain Knowledge

Beneficiary: Student

Outcome: Seminar on domain knowledge was organized for student of ECE in "Analog Electronics". In seminar student give presentation on working of various electronic devices. This help student to improve their presentation skill & technical knowledge of core domain of ECE.

Date: 9.1.18

Resource Person: Mr. Sujeet Shrivastav

Designation: Project Head

Affiliation: BDN

Beneficiary: Student & Faculty

Outcome: Expert lecture was given by Mr. Sujeet Shrivastav on " Project development Tool" to increase technical skill and employability in different domain of engineering for ECE students.

Date: 9.2.18

Resource Person: Mr. Tushar Mehta

Designation: Engineer

Affiliation: Sony Ericson

Beneficiary: Student & Faculty

Outcome: Expert was given by Mr. Tushar Mehta alumni of 2011-2015 batch to students of 4th and 6th Semester. In talk Mr. Tushar share his interview experience with student. He also gives some tips to student how to answer during interview.

Date: 2.4.18

Resource Person: Mr. Sahil

Designation: Head

Affiliation: Gyan Setu, Gurgaon

Beneficiary: Mr. Sahil, from Digital Marketing Head in Gyansetu Institute, Gurgaon was given expert talk on "Digital Marketing and Latest Trends in Information Technology". They have shared comprehensive introduction of Digital Markrting, Internet of Things, Arttificial Intelligence, and its applications.

Student Activity

Date: 8.9.17

Event: Trending News in ECE

Association: IEI Faridabad

Coordinator: Dr. Vimlesh Singh & Ms. Priyanka Bansal

Recourse Person from IEI: Mr. Sunil Bajaj

Report: Trending News in ECE in association with IEI – Competition (Club Event) was organized on 8.9.17.

1st prize winner: Mr. Ritesh Singh & Mr. Abhishek Bhayana ; Topic: Artificial Intelligence

2nd prize winner: Ms. Shreya Suman & Ms. Mahima Devangan; Topic: Haptic Technology

3rd prize winner: Ms. Sradhya & Mr. Mayank Duggal; Topic: Artifical Vision.

Date:27.10.17

Event: Technical paper presentation

Association: IEI Faridabad

Coordinator: Dr. Vimlesh Singh & Ms. Priyanka Bansal

Recourse Person from IEI: Mr. Sunil Bajaj

Report: Technical paper presentation on 27.10.17 for the students of III and V semester.

1st prize winner: 3rd Semester - Ms. Swati, Ms. Ritika & Ms. Deepanshi ; Topic: Nano particles
1st prize winner: 5th   Semester - Mr. Vishesh & Mr. Kush;   Topic: Vedic Multiplier

2nd prize winner: 3rd Semester - Ms. Ritu & Ms. Risha Goel; Topic: Fractal Antenna
2nd prize winner:5th   Semester - Ms. Vaishali, Ms. Snigdha   &   Ms.   Harshita; Topic: Wireless Sensor Networks

3rd prize winner: Ms. Yogita & Mr.Rohan; Topic: Textile Materials for the design of Wearable Antennas

Date:6.11.17

Event: Technical Quiz Competition

Association: IEI

Coordinator: Ms. Romika

Recourse Person from IEI: Mr. Sunil Bajaj

Report: Technical Quiz Competition was conducted in collaboration with IEI, Faridabad on 6.11.17.

1st prize winner: 1st Semester - Mr. Robin Singh

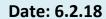1st prize winner: 7th Semester - Mr. Abhishek & Mr. Aman

2nd prize winner: 1st Semester - Mr. Mayank Chauhan

2nd prize winner: 7th Semester - Mr. Rahul Dayal

Date: 6.2.18

Event: Project presentation

Association: ECE Club

Coordinator: Dr. Vimlesh Singh & Ms. Priyanka Bansal

Report: Minor Project presentation in Electronics & Communication domain. Students of 3rd & 5th ECE Presented their minor project.

The Minor Projects were in the following domain:

(a) Digital Electronics

(b) Analog Electronics Circuit

(c) Communication Engineering

(d) Digital Signal Processing

This project presentation help student to enhance their practical learning experience.

Date: 29.3.18

Event: Project Technovation

Association: ECE Club

Coordinator: Ms. Shaveta Thakral & Ms. Prtima

Report: Department of Electronics & Communication Engineering had organized "Project Technovation" and invited first year enthusiasts students as hobbyists to present simple and interesting solutions that could come in handy in real life scenarios. These project based on Digital Electronics & Circuit.

Snippets Founder's day celebration 3-4 April 2018

Short Term Course

Date: 21.8.2017 – 25.8.2017

Event: FDP on Strategic Management and SWOT Analysis for Institution Excellence

Association: NITTR, Chandigarh

Coordinator: Dr. Shruti Vashist

Report: The objectives of this course are to provide overview of challenges of technical education system, strategic management, SWOT analysis, strategic leadership organizational communication and strategic industry academic partnership for institutional excellence.

Date: 9.10.17-13.10.17

Event: FDP on VLSI Design

Association: NITTR, Chandigarh

Coordinator: Ms. Romika , Ms. Ila & Ms. Gagandeep

Report: Faculty members got an exposure to the industrial and academia platform which helped in gaining knowledge regarding the current research as well as industrial requirements in the field of VLSI Design. Discussions on latest trends and developments in the integrated circuit technology provided a room to the participants for exploring new research areas and opportunities in VLSI.

Date:31.10.17-3.11.17

Event: FDP on Wireless and Mobile Communication

Association: NITTR, Chandigarh

Coordinator: Ms. Romika , Ms. Ila & Ms. Gagandeep

Report : Faculty members got an exposure to the industrial and academia platform which helped in gaining knowledge regarding the current research as well as industrial requirements in the field of Wireless & Mobile Communication. Discussions on latest trends and developments in Wireless domain provided a room to the participants for exploring new research areas and opportunities in this field.

Date:19.3.18-23.3.18

Event: FDP on Embedded Systems

Association: NITTR, Chandigarh

Coordinator: Ms. Romika , Ms. Ila & Ms. Gagandeep

Report : Faculty members got an exposure to the industrial and academia platform which helped in gaining knowledge regarding the current research as well as industrial requirements in the field of Embedded Systems.

Discussions on latest trends and developments in Embedded Systems domain provided a room to the participants for exploring new research areas and opportunities in this field.

Date:31.10.17-3.11.17

Event: FDP on Wireless and Mobile Communication

Date:19.3.18-23.3.18

Event: FDP on Embedded Systems

Research Publication by Faculty

Travelling Distance Estimation Based Approach to Minimize Unnecessary Handovers
Ms. Jyoti Madaan & Dr. Indu Kashyap

Abstract-Background: Mobility management is one of the most important challenges in next generation wireless networks (NGWNs) as it enables users to move across geographic boundaries of wireless networks. Nowadays, mobile communications have heterogeneous wireless networks offering variable coverage and Quality of Service (QoS). The availability of alternatives generates a problem of occurrence of unnecessary handoff that results in wastage of network resources. To avoid this, an efficient algorithm needs to be developed to minimize the number of handoffs. Conventionally, whenever a wireless local area network (WLAN) connectivity is available, the mobile node switch from cellular network to wireless local area network (WLAN) network to gain maximum use of high bandwidth and low cost of wireless local area network (WLAN) as much as possible. But to maintain call quality and minimum number of call failure, a considerable proportion of these handovers should be determined. Our algorithm makes the handoff to wireless local area network (WLAN) only when the predicted travelling distance inside the wireless local area network (WLAN) is larger than a threshold value.

For More Detail: http://www.eurekaselect.com/152847/article

A Probabilistic Feature Based SVM Model for English Speech Recognition
Ms. Priyanka Bansal & Mr. Syed Akhtar Imam

Abstract- In this paper, a multi-phase hybrid model is presented to improve the effectiveness of Speech Recognition. In the first stage of the model, the speech rectification is performed against different real time problems. Then hybridization of four algorithms is adapted to cover different noise and turbulence problems. The decomposition based filtration is then applied to remove background noise and peak observed spectral subtraction is applied to rectify the signal against instrumentation noise. The probabilistic predictor is applied to remove acoustic turbulence and Gaussian weighted map is applied to resolve the crosstalk problem. After recovering the signal from these real time problems, a dynamic block segmentation Fuzzy-HMM based structural-statistical method is defined for feature generation. The stage has combined the ICA, Fuzzy and HMM modeling to generate effective block feature set. Finally, the fuzzy weight based SVM classifier is applied to perform the speech signal classification. The results and observation shows that the proposed hybrid model has improved the maturity level and provided higher accuracy rate.

For More Detail: http://www.joetsite.com/wp-content/uploads/2017/10/Vol.-63-4-17.pdf

RF Energy Harvesting Antenna
Dr. Vimlesh Singh, Ms.Priyanka Bansal & Dr. Abhiruchi Passi

Abstract—Nowadays energy harvesting is essential because of the future scarcity of the natural mineral resources. Energy harvesting is done from those natural resources which are inexhaustible. So that it is more convenient than wall plugs and batteries which are costly and need replacements. Now, with ubiquitous computing requirements in the fields of embedded systems, wireless sensor networks and low power electronics such as MEMS devices, an alternative source of energy is required. Also with the limited capacity of finite power sources and the need for supplying energy for a lifetime of a system, there is a requirement for self-powered devices. The process of extracting energy from the surrounding environment is termed as energy harvesting. Energy harvesting, which originated from the windmill and water wheel, is widely being considered as a low maintenance solution for a wide variety of applications. There are various forms of energy that can be scavenged, like thermal, mechanical, solar, acoustic, wind, and wave. The Energy Harvesting is generating electrical energy from solar, thermal or kinetic energy present within or around the system. This paper serves as a survey for identifying the sources of energy harvesting based on various technical papers available in the public domain.

For More Detail: http://www.ijarse.com/images/fullpdf/1507612993_772ijarse.pdf

Automated Speaker Recognition Methods:A Critical Review
Ms. Priyanka Bansal & Dr. Syed Akhtar Imam

Abstract— In this paper, an overview of state-of-the-art approaches for speaker recognition is presented. Due to the increased scalar of dialogue system applications the interest in that province has grown boomingly in certain years. Nevertheless, there are many open up shots in the field of automatic speaker recognition. The techniques, evaluations, and implementations of various proposed speaker recognition systems are reviewed with distinctive emphasis on issues prerogative to confirmation of speaker. We also describe here our direction for possible improvement to the automated speaker identification.

For More Detail: http://www.ijarse.com/images/fullpdf/1507298745_ijarse_770.pdf

Diversity Techniques in Wireless Body Area Network
Ms. Savita and Dr. Shruti Vashist

Abstract— In WBAN various sensors and actuators are connected together either on the body, under the skin of person or on the clothes of the person. This network expands when the signals from the body are picked and sent over a wireless channel. The world that we live in has become very advanced, and hence it is required that the technology we use for communicating the signal should be very expeditious, i.e. our data carrying signals should profuse in excellently, so that data can be communicated without any intervention as the signals picked from body are of short range. But the data carrying signals that are relayed from one place to other often encounter various interferences in their path. One of the major problems in communicating wirelessly that has to be dealt with is fading. In WBAN if the signals can be captured with maximum information we can easily diagnose patient's disease for example; Cardiovascular diseases, diabetes control etc. Diversity is an important aspect that helps in dealing with the effects of fading. This paper focuses on the diversity techniques (Maximal Ratio Combining, Equal Gain combining, Selection Diversity) which are one of the popular mitigation methods; in different fading channels in WBAN. It also provides a comparative study of diversity techniques in fading channels w.r.t. to AWGN channel and three of the diversity techniques with respect to theoretical results.

For More Detail: file:///C:/Users/tcs/Downloads/An%20Overview%20of%20Vertical%20Handoff-133.pdf

A Wavelet Approach for Medical Image Denoising
Ms. Gagandeep Kaur, Ms.Romika Choudhary, Mr.Ashish Vats

Abstract—Medical Images have always been vulnerable to high level components of noises. Magnetic Resonance Imaging (MRI), X-ray, Computed Tomography and Ultrasound are among most popular techniques for producing medical images, during image capture and transmission noise is added in the images that decreases the image quality and leads to poor image analysis. Various denoising techniques are used to remove the noise or distortion from images while preserving the original quality of the image among which wavelet transform has been proved an efficient one in reducing the noise level. The aim of this paper to characterize the Gaussian noise in wavelet transforms subsequently a threshold based denoising algorithm has been developed using hard and soft thresholding techniques that works on Haar, Daubechies and Symlet Transforms. Firstly the image is decomposed using Haar and Daubechies and symlet transforms, and then the level of soft and hard threshold is selected for reducing the noise in the image and finally the comparison between them has been done on the basis of calculated PSNR& MSE of an image for every wavelet.

For More Detail: http://www.ijarcs.info/index.php/Ijarcs/article/view/4621

Review : Speaker Recognition Using Automated Systems
Ms. Priyanka Bansal, Dr.Sayed Akhtar Imam & Dr.Vimlesh Singh

Abstract- Speaker recognition is one of most popular technique which validates the identity of a person from the data record. Nowadays, it is considered most useful biometric identification technique in the laboratory, industries etc. This technique is very secure, user-friendly & easy to implement. This paper gives a review of speaker recognition process which provides massive security. With the change in technology speaker recognition and validation of speech gained visibility and importance in the public as audio content, speech technology, and e-commerce. With an increase in demand for audio materials, speaker recognition creates growing interest. This paper explains various steps of speaker recognition such as speaker verification, speaker identification, feature extraction technique like LPC, LPCC, RCC, MFCC & PLPC, speaker modeling and concluding remark of this technique.

For More Detail: http://aguijet.com/images/short_pdf/1507698522_771aguijet.pdf

A study : Wearable Antenna
Dr.Vimlesh Singh, Ms.Priyanka Bansal, Dr.P. K. Singhal & Dr.Lalit Gupta

Abstract - This paper present future possibility of using fabric for technological advancement in healthcare, safety, protection, lifestyle and many more applications of the wearable antenna. The wearable antenna has a planar as well as flexible construction that converts fabric in to a communication system that can be used for monitoring & sensing of the human body. Properties such as bandwidth and efficiency of planar antenna depend on permittivity and thickness of substrate material influence performance of textile used for the wearable antenna. The wearable textile material is available in the global market that is used in the design of the wearable antenna. However, information about electromagnetic properties of the regular fabric is very less. So this paper mainly focuses on dielectric characteristics of regular fabrics. Planar antenna is best suited for wearable application due to its flexible nature & its characteristics of radiating in a perpendicular direction. The ground plane of this planar antenna is shielded by tissues of the body. In regular practice, textiles have very low dielectric constant which minims losses due to surface wave that also increases impedance bandwidth of an antenna. But textile continuously keep on exchanging water molecules from the surrounding that affect electromagnetic properties of the textile material. In general, textiles are porous in nature, anisotropic and flexible as a function of thickness and density that can be changed with low pressures. This survey present keynote on selection, design & development of textile antenna.

For More Detail: https://www.springer.com/gp/book/9789811305887

Future of Internet of Things in 5G Wireless Networks
Dr. Abhiruchi Passi & Dr. Deepak Batra

Abstract—

Internet of Things or IoT has evolved and will play a major role in our lives in the near future. Though in the nascent stage, it conceptually means an interconnected network consisting of physical objects, wearables, machines, buildings, automobiles and a variety of other types of devices that contain embedded technology to communicate and sense or interact with their internal states or external environment. With the advent of next generation 5G wireless technology around 2020, a wave of globally connected digital society will come into existence. In this paper we will discuss about the benefits which will be provided to IoT with the onset of 5G wireless technology and the challenges which IoT will offer to 5G.

For More Detail: https://www.sciencepubco.com/index.php/ijet

Real Time EEG Based Cognitive Brain Computer Interface for Control Applications via Arduino Interfacing

Dr.Rashima Mahajana & Dr. Dipali Bansal

Abstract- Cognitive neuroscience is being widely explored to develop more interactive brain computer interfaces for control applications. An attempt has been made to translate a cognitive activity (deliberate eye blink) of human subjects captured via electroencephalography (EEG) into action. Channel power spectral and the highest peak related features have been extracted to identify eye blink related instances. A significant rise in event related potential is observed across frontal lobes of cerebral cortex. The developed model has been deployed in arduino using simulink to control output devices independently. The results demonstrate the feasibility of cognitive control network to translate deliberate intentions into commands via EEG based BCI for rehabilitation of physically challenged patients.

Performance Evaluation of Speaker recognition system using Shifted MFCC, DSCC and Fuzzy Techniques

Ms. Priyanka Bansal & Dr.Syed Akhtar Imam

Abstract- Speech and speaker recognition systems are biometric inspired systems which are having scope in various online and offline applications. In case of biometric we ponder the variability of speech signal due to the presence of noise which greatly degrades the efficiency of Automatic Speaker Recognition (ASR) in real-world environmental circumstances. Real world speech signal is degraded by different types of noise signals like background noise, interference noise and crosstalk noise. In this paper, we have used Delta Spectrum Cepstrum Coefficient (DSCC) and Shifted MFCC with fuzzy modeling techniques to rectify the deed of ASR even in a noisy surrounding with the help of upgraded speech information which is present at high frequency in the spectral domain. The combination of fuzzy modeling and DSCC creates a firm cumulative algorithm which has reasonably high robustness to noise. Experimental results show that accuracy has enhanced by 10-20% even at 5-8dB SNR in the presence of background noise or turbulent environmental condition or in the presence of white noise.Thus proposed model has improved maturity level in comparison to obsolete methods.

For More Detail: https://www.sciencepubco.com/index.php/ijet/article/view/10424

Microstrip line Antenna Fabrication Materials

Dr. Vimlesh Singh, Ms.Priyanka Bansal & Dr. P.K.Singha

Abstract: This paper presents an extensive survey of electromagnetic materials used for antenna fabrication, which find application in Civilian life as well as defense life. When a densely packed microwave integrated circuit is designed, it requires protection from higher power transient because of specific polarization and frequency response. To meet specification of such kind of microwave circuits it is desired to exploit properties of fabricating materials, which are not found in nature but can be prepared with specific proportion of chemical element combination. This study provides in-depth responses of materials toward electromagnetic wave's characteristics such as dielectric, flexible electronics, electrical and thermal properties, which have vast potential in communication engineering.

For More Detail: https://www.sciencepubco.com/index.php/ijet/article/view/10437

A probabilistic Feature based SVM model for english/hindi Speech Recognition

Ms. Priyanka Bansal & Dr.Syed Akhtar Imam

Abstract: Real time speech recognition has various challenges including noise, turbulence, language and crosstalk problem. In this paper, multi-phase hybridization is applied to cover these challenges and to provide effective speech recognition. The model is explicitly divided into three main stages where each stage is implicitly divided into several sub-stages to provide specific problem solution. The proposed hybrid model resolved the problem of acoustic turbulence, background noise and instrumentation noise problem at the earlier stage. The rectified speech signals are processed using ICA and Fuzzy-HMM approach to generate the structural and statistical features. In this stage, the signal is divided in smaller linear blocks to extract the features. Later on, fuzzy-weighted SVM is implied to recognize the speech signal. The experimentation is applied on Hindi and English characters and sentence datasets. The comparative results are derived against BPNN and PCA models for different sample sets. The comparative results obtained from model signifies that the model has improved the recognition rate effectively.

For More Detail: https://www.sciencepubco.com/index.php/ijet/article/view/.../3753

Design and Analysis of Tunnel FET for Low Power High Performance Applications
Mr.Umesh Dutta, Dr.M.K Soni & Dr.Manisha Pattanaik

Abstract— Tunnel FET is a promising device to replace MOSFET in low power high performance applications. This paper highlights and compares the best TFET designs proposed in the literature namely: Double gate Si-based TFET, InAs TFET device and III-V semiconductor (GaAs1-xSbx-InAs) based TFET device. Simulations are performed using TCAD tool and simulation results suggest that conventional DGTFET device has less on current and degraded subthreshold slope as compared to InAs and III-V semiconductor based TFET device. InAs based TFET device provides steep subthreshold slope of 61 mV/dec and off current of the order of nano-amperes at sub 1V operation thereby making it an ideal choice for low power high performance applications. The variation in the performance of the III-V HTFET device with the variation in the mole fraction is also studied in detail. Carefully choosing the mole fraction value in III-V semiconductor based HTFET device can lead to better device performance.

A Novel Handoff Necessity Estimation Approach Based On Travelling Distance
Dr.Jyoti Madaan & Dr.Indu Kashyap

Abstract- Mobility management is one of the most important challenges in Next Generation Wireless Networks (NGWNs) as it enables users to move across geographic boundaries of wireless networks. Nowadays, mobile communications has heterogeneous wireless networks offering variable coverage and Quality of Service (QoS). The availability of alternatives generates a problem of occurrence of unnecessary handoff that results in wastage of network resources. To avoid this, an efficient algorithm needs to be developed to minimize the unnecessary handoffs. Conventionally, whenever a Wireless Local Area Network (WLAN) connectivity is available, the mobile node switch from the cellular network to wireless local area network to gain maximum use of high bandwidth and low cost of wireless local area network as much as possible. But to maintain call quality and minimum number of call failure, a considerable proportion of these handovers should be determined. Our algorithm makes the handoff to wireless local area network only when the Predicted Received Signal Strength (PRSS) falls below a threshold value and travelling distance inside the wireless local area networkis larger than a threshold distance. Through MATLAB simulation, we show that our algorithm minimizes the probability of unnecessary handoff, and probability of handoff failure. Hence, the proposed algorithm is able to improve handover performance.

Comparative analysis of different wavelet filters and image enhancement using Histogram equalization
Ms.Pratima Manhas & Ms.Shaveta Thakral

Abstract- Histogram Equalization is an image processing method to improve quality of image by transforming low contrast areas with high contrast. Image enhancement using histogram equalization is usually based on principle of effectively stretching out the most recurring intensity values of pixels. In this paper the gray scale image enhancement is done using histogram equalization. The pixel intensity and pixel frequency is plotted for both the original image and histogram image. Histogram equalization technique along with different wavelets filters such as orthogonal and biorthogonal wavelet filters, contrast value is enhanced and denoising is done. Finally comparative analysis of different wavelet filters is presented using MATLAB 15.

Image processing by using different types of Discrete wavelet transform
Ms.Pratima Manhas & Ms.Shaveta Thakral

Abstract- Image processing is emerging research area which seeks attention in biomedical field. There are lots of image processing techniques which are not only useful in extracting useful information for analysis purpose but also saves computation time and memory space. Transformation is one such type of image processing technique. Examples of transform techniques are Hilbert transform, Fourier transform, Radon Transform, wavelet transform etc. Transform technique may be chosen based on its advantages, disadvantages and applications. The wavelet transform is a technique which assimilates the time and frequency domains and precisely popular as time-frequency representation of a non stationary signal.In this paper different types of Discrete wavelet transform is applied on an image. Comparative analysis of different wavelets such as Haar, Daubechies and symlet 2 is applied on image and different filters respond are plotted using MATLAB 15.

Research Publication by Student

An Overview of Qualitative Comparative Analysis of Multipliers
Mr. Vishesh Tyagi, Mr.Himanshu Kukreja, Mr.Kush Kumar, Ms.ShavetaThakral

Abstract- —Multipliers show a significant part in today's modern scientific computers, digital signal processing and numerous additional computing applications. High processing speed and the demand of low power consumption in multiplier units is highly demanding in today's VLSI system. Speed of any computing environment depends mainly on multipliers and multipliers are generally slowest in speed. The multiplication speed can be improved by decreasing the number of partial products as multiplication process includes the generation and accumulation of partial products. So, minimization of partial products is the main requirement. Therefore comparative study and analysis is done on various multipliers to add on high speed and low power requirements. This paper mainly focused to present the critical review of existing multipliers

A State-of-The-Art Study on Multipliers: Advancement & Comparison
Mr.Kush Kumar , Mr. Vishesh Tyagi , Mr. Himanshu Kukreja , Ms.Shaveta Thakral

Abstract- In modern era digital signal processor are the crucial components of the communication system setup. The essential part of the digital signal processors are multipliers, which helps to control the communication speed and also plays key role in other various applications such as Image Processing. Real time multimedia applications necessitate high speed computations. The key arithmetic operation i.e. Multiplication process depletes most of the time and hardware resources of a processor among all the arithmetic operations. Therefore, it necessitates a fast multiplier to be designed for enhancing the system performance. Procedure such as multiply, accumulate and inner products are the frequently used computation intensive arithmetic functions. These functions are applied to process many computations such as Fast Fourier Transform (FFT), filtering and convolution. These multiplications based calculations determines the instruction cycle time of the most algorithms and dominates the execution time of the digital signal processor. Currently, high speed processing devices are one of the primary demands which developed the necessity of higher throughput operational devices. Hence fast, reliable and efficient multiplier design is essential. Also the multipliers are more power consuming devices. As the portable, battery operated systems are the necessity nowadays due to the mobility, the power consumption is one of the major design constraints. Though multiplier is also a complex circuit designed device and consumes greater area. Therefore, it is imperative to design compact and efficient multipliers with less power dissipation. Again, the multiplier performs multiplication operation on unsigned numbers only. Thus, modern computer requires a committed and rapid multiplier unit, which can operate both types of numbers i.e. signed and unsigned. This paper presents a comprehensive study on different multipliers specifically, Array multiplier, Booth multiplier, Modified booth multiplier, Wallace tree multiplier, Modified Booth-Wallace tree multiplier and Vedic multiplier based on their operational procedures and working principals along with the advantages and limitations. A comparative analysis is also takes place on various performance parameters of these multipliers such as speed, area, power utilization and circuit complexity.

Location Based Protocols in WSN: A Review
Ms. Vaishali Mittal , Ms. Snigdha Pokhriyal , Ms. Harshita Srivastava, Dr. Shruti Vashist

Abstract-Nowadays, wireless sensor network (WSN) technology is one of the fast emerging and growing technology due to its several features such as easy installation, low maintenance requirements, self-organizing capability and a wide range of applications. The nodes used to form a network, adjust themselves according to the temperature and having good processing capabilities. These developments have led to many designed protocols, which are accountable for maintaining the routes and to confirm trustworthy 9communication with low power consumption. In this paper, the location-based routing protocols have been studied, investigated and compared.

Study & Comparison Analysis of SRAM at 65nm and 90nm Technology
Ms. S.Gayathiri, Dr. Deepak Batra and Dr. Jyoti Verma

Abstract- In this paper we are analyzing the simulation of the 6T SRAM Cell in 65nm & 90nm Technology using TANNER EDA tool and Micro wind. We are using simulations results of variations in power and Delay with two cases, (i) Variation in VDD (ii) Variation on Temperature.

Microwave Effect on Human : A brief Review
Ms. Ritu Halder, Ms. Risha Goel, Dr. Vimlesh Sinngh , Ms. Priyanka Bansal & Dr.Lalit Gupta

Abstract- In today's growing world, millimeter electromagnetic waves are one of the mostly employed ways of communication. These high frequency microwaves are also used for various biological effects on human tissue. So it is important to investigate the effect of electromagnetic on biological tissue and its cost on human health. Non-ionising EM Wave energy produces radiation at molecular level which changes in terms of vibrational energy of molecules or heat. For

identification of threats of microwave radiation on biological tissue, various controversial and complex processes are encountered. Measurement of dosimetric radiation on human tissue is practically not possible because of the life threatening effect of microwave. So to measure its effect, various computational techniques are adopted for estimation of power density of electromagnetic waves deposited on human tissues. To analyze microwave effect apposite tissue phantoms is used to sidestep the issue and perform practical measurement. In this paper author pointed out the major effect of microwave heating on biological tissue in human being.

Snippets Various Departmental Events: 2017-2018

Fresher's Party 17

Orientation ECE-2017 Batch

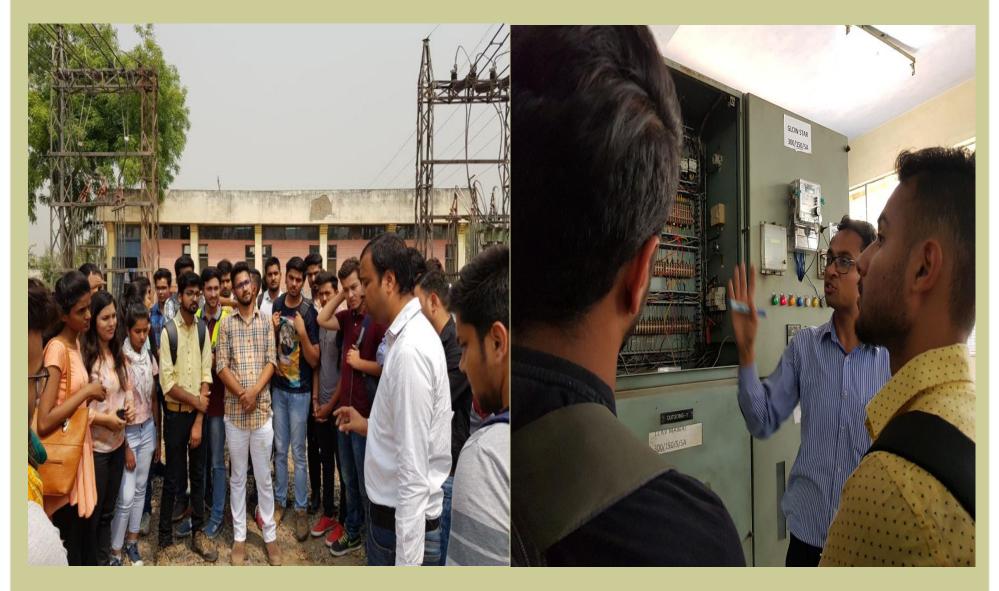Team SAEINDIA: E-BAJA (2018-2019)

Industrial Visit of 5th semester ECE to Hughes Systique, Gurgaon on 2.9.17

Industrial Visit of 3rd and 5th semester students to NPTI Faridabad on 6.9.17

Industrial/ Educational Visit

Industrial Visit of 2nd semester students to 66k V Sub-Station Sector-31, HVPNL, Faridabad, on 5.4.18

Industrial Visit of 6th semester ECE to True Chip, Noida on 29.4.17

To investigate research opportunities and project development Dr. Dipali Bansal visited National Brain Research Centre(NBRC),Manesar on 6.9.2.17.

Dr. Vimlesh Singh and Ms. Priyanka Bansal Presented a paper "A study : Wearable Antenna" at International Conference of Soft Computing Theories and Applications - 2017 at Institute of Engineering & Technology, Bundelkhand University, Jhansi from 22.12.17 – 24.12.17. This was adjudged as best paper of the conference under the category of application based technological development.

Ms. Jyoti Verma assistant professor ECE submitted her Ph.D on 8.3.2018.

Team FIA-2018

Alumni

The curriculum of our College provides high flexibility and massive learning opportunities. It provided highly challenging but equally stimulating environment for me to help shape my career direction. Thanks to the excellent faculty, my encounter with various courses invoked in me excitement and fascination for electronics field.

Mr. Dikshant Malik
(Entrepreneur)
(2010-2014)

As a student in Electronics and Communication I was heavily trained in basic domain knowledge, from theoretical courses to practical courses using various hardware and software tools. My consequent years of study were mainly focused on writing term papers where I also reaped benefits of being a part of multi-cultural student body. I continuously learned how to share ideas with people from different backgrounds and perspectives.

Mr. Tanuj Garg
(Entrepreneur)
(Batch 2008-2012)

Note Here: