



# IMPULSE

**ECE ONLINE NEWSLETTER**

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## AUGMENTED REALITY

Vidya C IV yr E.C.E. B - Sec.

My friends and I decided to give our proposal for the Intel project at the beginning of the semester. While we were searching for ideas, a friend of ours did an application based on Augmented Reality (AR) for Orbitce, which intrigued us and our curiosity was aroused. We Googled AR and found that Wikipedia defines it to be a live, direct or indirect, view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data. They say a picture can say more than a thousand

words, a Youtube link pointing to a TEDx video, complimented the saying with a lucid visual regarding the concept. That was when we decided working on AR for the Intel project would be fun. The idea was to make learning easier for kindergarten kids.



Imagine a wall with lots of pictures arranged in a matrix form. The subject of the pictures could be characters from fairy tales like Ariel, Cinderella, and Snow White etc. When the kid focuses his phone camera on any of the pictures, the code we write will detect the picture and play a video related to that picture. As I've already pointed out that a video allows for better understanding, this would make the learning process faster and simpler for the kid. The work was cut out for us. We needed to identify the picture with the maximum area in the captured frame, in case the kid did not capture a single picture completely. The pictures in the frame could be slightly rotated if the phone is not held properly. For that, the frame must be rotated back to its original position on the wall before zeroing in on a particular picture. Then the picture with the maximum area must be cropped from the captured frame and compared with each of the images in the database. The database will have all the pictures which have been put up on the wall. To make life easier, we decided that the pictures should have black scribes between them. When we started with the code, we faced a lot of difficulties. The first major problem was the environmental conditions. Sometimes, a shadow fell on the captured

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picture which made the detection of the scribes difficult. The next problem was the resolution and clarity of the camera. If the clarity was bad, then the comparison with the images in the database (which would have a high resolution) became difficult. The third problem was the algorithm which has to be used for comparison. After working on the first two problems, we were able to rotate the captured frame to its original position and crop the picture which had the maximum area with a good degree of confidence. The third part was comparison. Initially we thought we could take a weighted average of all the pixel values in both the cropped picture and all the pictures from the database. The video related to the picture whose weighted average was closest to the cropped out picture would then be played. But this didn't work out

in most cases mainly because the clarity of the camera used to capture the picture and clarity of the pictures in the database were widely different. The hardest part was transferring our code which was written using Matlab to Python. This needed to be done because our code had to be implemented using the Intel Atom Processor. Since none of us knew Python, we had to start from scratch. In order for a Python program to work the right packages had to be installed and it took us several days to find the right ones. Displaying an image in Python took us more time than learning about SURF. But once we got the hang of it, we found that python with Open CV modules had a lot to offer. And now, we hardly ever open Matlab. So, I guess the initial push was what we required.

## FACULTY NEWS

### RESEARCH NEWS

Our faculty members are actively involved in several research activities including guiding PhD scholars. They have submitted project proposals to external funding agencies like AICTE, DST, NRB etc. for projects and continuing education programme. Following are the highlights of our department research activities.

1. Dr. V. Rajendran, (Prof/Physics) and Mr. S. Sakthivel Murugan, have submitted a project proposal on "Geo Acoustic Inversion study at Bay of Bengal Using Array of Hydrophones for Underwater Applications" to Naval Research Board worth Rs. 69.50 Lakhs.
2. Dr. V. Rajendran, (Prof/Physics), Mr. S. Sakthivel Murugan, and Dr. P. Venugopal (Asso. Prof/ Maths) have submitted a project proposal on "Vertical coherence and directionality study of underwater Acoustic ambient noise in Bay of Bengal " to Naval Research Board worth Rs. 24.20 Lakhs.
3. Dr. B. S. Sreeja, has submitted a project proposal on "Design, analysis and implementation of MEMS based Dual and Quad output switch Matrices for

satellite payload applications" to Department of Science and Technology (DST) under fast track scheme.

4. Dr. R. Kishore, submitted a proposal to All India Council for Technical Education (AICTE), New Delhi for conducting a Faculty Development Programme on "Cryptography and Network Security" during June 2014.
5. Modernization & Removal of Obsolescence (MODROBS) proposal on "Establishment of Microwave and Antenna Testing Laboratory" was submitted to AICTE in the month of Nov. 2013.
6. Dr. Premanand Chandramani and Dr. R. Rengaraj (Asso.Prof/EEE) submitted a project proposal to Science and Engineering Research Board of DST entitled "Demand side Management (DSM) including Energy Optimization and Prediction for Residential Neighborhoods in a Smart - Grid" of worth Rs. 29 lakhs.
7. DST – FIST (Fund for Improvement of S&T Infrastructure) submitted by our Principal Dr. S. Salivahanan and Dr. S. Radha, HoD/ECE, worth Rs 50 lakhs, is sanctioned by DST, Govt. of India,



Ministry of Science and Technology, New Delhi under 50:50 scheme.

8. Dr. S. Radha and Dr. Premanand Chandramani received Rs. 1.5 lakhs from INTEL to upgrade Low power Computing Systems Lab.

9. Dr. S. Radha conducted the Ph.D Public Viva-Voce Exam for her candidate Ms. Johnsi Stella, Assoc. Prof/ECE, St. Joseph College of Engg. entitled "Investigations on Distributed detection in Wireless Sensor Networks" on 25<sup>th</sup> Oct. 2013.

10. Dr. S. Sundaravadivelu, Prof/ECE conducted the Ph.D Public Viva-Voce Exam for his candidate Mr. G. Ramesh entitled "Analysis of efficient routing algorithms in Fault tolerant Optical WDM Networks".

11. Dr. R. Jayaparvathy, Prof/ECE conducted the Ph.D Public Viva-Voce Exam for her candidate Ms. S. Geetha entitled "Performance Analysis of Scheduling Scheme for Fixed Broadband Wireless Access Systems".

1. Mr. M. Gulam Nabi Alsath, and Ms. S. Esther Florence, received Internal Funding worth Rs.6.5 Lakhs from SSN Trust for their project titled "Design and Development of Polymer Composite Based Reflect array Antenna for Space Applications".

2. Mr. S. Sakthivel Murugan, and Mr. I. Nelson, received Internal Funding worth Rs 7 Lakhs from SSN Trust for their project titled "Development of Underwater acoustic Communication Research lab".

**Congratulations !!!**

### TECHNICAL PRESENTATIONS

Faculty members of our department shared their knowledge in their area of expertise by delivering invited talks and guest lectures in many technical institutions. Also they served as chairpersons and chief guest for many technical conferences and events. To name a few:

1. Dr. N. Venkateswaran, delivered a talk on, "Transforms in Image Compression" in AICTE sponsored two day National level seminar on "Transforms on signal and image processing", conducted by Department of Biomedical Engineering, SSN College of Engineering, on 26<sup>th</sup> July, 2013.

2. Dr. R. Amutha, acted as session chair for the AICTE sponsored National Conference on Recent Trends in Computer Applications (NCRTCA'13) organized by MCA Department of SSNCE on 26<sup>th</sup> July, 2013.

3. Dr. N. Venkateswaran, inaugurated CSIR sponsored two day workshop on "Retinal Image Processing" and delivered a lecture on "Image Processing with retinal

Images" conducted by Shri Andal Alagar College of Engineering, 22<sup>nd</sup> Aug. 2013.

4. Dr. R. Amutha, delivered a guest lecture on "Data compression" at Sri Venkateswara College of Engineering, Chennai on 4<sup>th</sup> Sep. 2013.

5. Dr. R. Amutha, delivered a guest lecture on "Diversity" at Velammal Engineering College on 06<sup>th</sup> Sep. 2013

6. Mr. S. Sakthivel Murugan gave a talk on the topic "Satellite and Fiber Optic Communication" at Velammal Engineering College on 10<sup>th</sup> Sep. 2013.

7. Dr. R. Kishore, delivered an invited talk on "Research Challenges in Secured Wireless Sensor Networks" at Sri Venkateswara College of Engineering, Chennai 18<sup>th</sup> Sep. 2013.

8. Dr. R. Rajavel, delivered guest lecture on "Digital Signal Processing and its applications using TI C6000 DSP" at Travancore Engineering College, Trivandrum on 26<sup>th</sup> & 27<sup>th</sup> Sep. 2013.

9. Dr. K. T. Selvan, inaugurated the IEEE Student

Branch at Rajiv Gandhi College of Engineering, and delivered a talk on “Perspectives on research and publishing” on 6<sup>th</sup> Nov 2013.

10. Dr. N. Venkateswaran, presented a lecture on “Sparse representation and modeling” in the Faculty Development Programme on “Emerging Directions in Digital Image Processing” conducted by Government College of Engineering, Salem on 8<sup>th</sup> Nov, 2013.

11. Dr. K. T. Selvan, delivered a talk entitled “Fundamental electromagnetic concepts” in the three day workshop on “Electromagnetics” conducted by IEEE AP-S Madras chapter in the Department of ECE, SSN College of Engineering on 11<sup>th</sup> Nov. 2013.

12. Mr. V. Vaithianathan, delivered an invited talk on “IC Design & Fabrication Overview and Operational Amplifiers & Its Applications for Signal Conditioning” in an ISTE sponsored two weeks FDP on Mechatronics organized by Department of Mechanical Engineering, SSNCE on 10<sup>th</sup> Dec. 2013.

13. Dr. N. Venkateswaran, gave a lecture titled “Sparse Modeling in Image and Signal Processing” in the two day National workshop on Applications of Signal and Image processing held at Sri Venkateswara College of Engineering on 11<sup>th</sup> Dec 2013.

14. Dr. S. Radha delivered a invited talk on “Applications of WSN for Video Surveillance” in National level workshop on “Mathematical Modeling in WSN and Hands-on Training in OMnet++ Tool” at Sathyabama University on 12<sup>th</sup> Dec. 2013.

15. Dr. P. Vijayalakshmi delivered a talk on “Statistics in speech - features to modeling” in the two day National workshop on Applications of Signal and Image processing held at Sri Venkateswara College of Engineering on 12<sup>th</sup> Dec 2013.

16. Dr. S. Radha chaired a session in International Conference on “Green Computing, Communications and Conservation of Energy” organized by RMD Engineering College, Chennai on 13<sup>th</sup> Dec. 2013.

17. Mr. V. Vaithianathan, gave an invited talk on “Combinational Logic Design” in an FDP on “EC2354-VLSI DESIGN” organized by Department of ECE, Vivekandha College of Engineering for Women, Elayampalayam, Tiruchengode on 13<sup>th</sup> Dec. 2013.

### WORKSHOPS & SHORT TERM COURSES

Continuing education programs are great boon to the students and also to the teaching community. Knowledge updations in terms of technological advancements are happening because of such programs. ECE department has organized bunch of workshops and short term courses under this category. To name a few:

1. Two day National level hands-on workshop on “Trends & Developments in Signal Processing & its Application” is conducted during 19<sup>th</sup> – 20<sup>th</sup> Aug. 2013 coordinated by Dr. R. Rajavel and Mr. S. Joseph Gladwin. This workshop was sponsored by Texas Instruments (TI) University Program Partner, Cranes Software International Ltd., Bangalore. 35, Researchers and faculty members who are working in the area of signal processing were benefitted by this program. Technical support engineer Mr. Ajaruddeen Pyati, from Cranes Software conducted the hands-on training in TMS320C6713 DSP Processor during the workshop.



Figure 1: Workshop - Trends & developments in Signal Processing & Its Applications



2. For the benefit of the students, faculty members and industry personnel, our department organized a two day National workshop on "ARM mbed Cortex M- Processor platform" during 20<sup>th</sup> – 21<sup>st</sup> Sep. 2013. This workshop was organized by Mr. S. Sakthivel Murugan jointly with Transmos Technologies. Introduction, demonstrations and hands-on sessions of ARM Cortex M - Processor were handled by technical experts from Transmos Technologies, Coimbatore. Around 65 participants from various engineering colleges and industries attended this programme.



Figure 2: Workshop - ARM mbed Cortex M-Processor Platform.

3. Recently, a three day workshop on "Electromagnetics" was conducted by IEEE AP-S

Madras chapter in association with the Department of ECE, SSN College of Engineering. This workshop was coordinated by Dr. K. T. Selvan, Mr. S. Joseph Gladwin and Mr. S. Karthie. 60 faculty members and researchers having interest in the area of Antennas and Propagation were benefited by this event. In this workshop, Dr. N. Gunasekaran, Professor, Rajalakshmi Engineering College, delivered a talk on "EM Wave Propagation". Introduction to computational EM was handled by Dr. H. Ramachandran, IIT Madras. Dr. P H. Rao, SAMEER, Chennai gave a lecture on "Practical aspects on Antenna Design". Dr. K. J. Vinoy, IISc, Bangalore, gave a talk on "Meta materials in RF Circuits". Dr. R. K. Mishra, Berhampur University, handled a session on "Soft computing on Planar Antennas". Practical sessions were handled by Mr. B. Ganesh, Amphenol Antenna Solutions, Chennai.



Figure 3: Workshop - Electromagnetics

Ms. K. Muthumeenakshi, presented a paper titled "Analysis of Distributed Dynamic Spectrum Access Scheme in Cognitive Radios" in the International Conference on IT and Intelligent Systems (ICITIS'2013), Penang, Malaysia organized by Planetary Scientific Research Centre, Malaysia.



Ms. R. Hemalatha., presented a paper titled "Energy Efficient Image Transmission over Bandwidth Scarce WSN using Compressed Sensing" in the International Conference on IT and Intelligent Systems (ICITIS'2013), Penang, Malaysia organized by Planetary Scientific Research Centre, Malaysia. She won the "best paper award".

Ramani B, Actlin Jeeva M P, Vijayalakshmi P, Nagarajan T, "Voice conversion-based Multilingual to Polyglot speech synthesizer for Indian Languages" in the Proceeding of IEEE TENCON 2013, Xi'an, China, 22-25, October 2013.

### Congratulations to Ms. N. Edna Elizabeth for completing her Ph.D

#### STUDIES ON MULTIPLE ATTACKS AND SECURE ROUTING FOR MOBILE AD HOC NETWORK

Ms. N. Edna Elizabeth, Associate Professor of our Department has defended her thesis in front of expert panel members and completed her Ph.D on 1<sup>st</sup> Oct. 2013 under the supervision of Dr. S. Radha HOD/ECE Department, SSNCE.



The main objective of this thesis is to propose new techniques to improve the routing mechanism using trust levels for Mobile ad hoc networks, by detecting and eliminating various routing attacks. It focuses on two aspects, initially, different types of attacks are handled by devising a node transition based routing algorithm that can overcome all possible threats in MANETs, and can also maximize the bandwidth utilization at high traffic costing a lesser overhead. Secondly, new routing attacks are studied, and implemented, and a new algorithm is proposed for overcoming such attacks, using the Ad hoc On-demand Distance Vector protocol and Node Transition Probability routing protocol. Thus, the proposed MIST algorithm (algorithm for Modification, Impersonation, Sleep deprivation and Time to live attacks) can efficiently secure the MANETs against the major threats in wireless networks.

### Congratulations to the Best Teachers



Ms. P. Kaythry, Assistant Professor and Dr. P. Vijayalakshmi, Professor received the Best Teachers Award for the academic year 2011 - 2012 from Prof. Abdul Khader, Rtd. Tamil Professor, during the Teachers Day Celebration on 14<sup>th</sup> Sep. 2013.



### Congratulations to Mr. K. S. Vishvaksenan for completing his Ph.D

#### INVESTIGATIONS ON THE PERFORMANCE OF INTERLEAVE DEVISION MULTIPLE ACCESS SCHEME

Mr. K. S. Vishvaksenan, Assistant Professor of our Department has defended his thesis in front of expert panel members and completed his Ph.D on 15<sup>th</sup> Nov. 2013 under the supervision of Dr. R. Seshasayanan, Asso. Prof/ECE, Anna University.



A chip interleaved CDMA system called the interleave division multiple access system (IDMA) has drawn wide attention among research community. The concept of IDMA has been developed by Li Ping and team who demonstrated that it inherits all the advantages of CDMA and provides superior performance than CDMA by iterative decoding algorithm mitigating the effects of inter-symbol-interference (ISI) and multiple access interference (MAI). We have investigated the performance of MIMO-IDMA system and MIMO Multicarrier-IDMA system considering uni-polarized and Dual-Polarized antennas with various detection algorithm such as linear and non-linear Zero forcing (ZF) multi-user detection (MUD), linear MMSE-MUD, and with transmitter preprocessing technique. We have concluded that IDMA will be good contender for future wireless communications.



## Welcome to our new faculty members

Dr. Nandita Lavanis, Associate Professor joined us on 2nd September 2013. Dr. Nandita obtained her B.E. degree in Electronics Engineering from VNIT, Nagpur (formerly VREC) and her M.E. in Electrical Communication Engineering from Indian Institute of Science, Bangalore, India. She has earned her PhD from IIT-Madras, Chennai in the area of performance analysis of Multi-Antenna Systems. She has around 9 years of professional research experience that spans across the following organizations: Tata Elxsi (India) Ltd, Philips Semiconductors division of Philips Software Center, Indian Institute of Science, Bangalore and Indian Institute of Technology, Madras. During her academic and industrial stints, she has mainly worked on the following areas: ADSL modem design, Image Compression algorithms, CDMA system, performance evaluation of MIMO systems. Her research interests include MIMO communication systems and signal processing for communications.



Mr. S. Ramprabhu has joined as an Assistant Professor in the Department of ECE on December 2013. He completed his B.E. in ECE from Kongu Engineering College, Perundurai in the year 2010 with a University Rank and M.E. in Communication Systems from College of Engineering, Guindy, Anna University, Chennai in the year 2013 with a Gold Medal. He is currently working towards his Ph.D in the area of EMI/EMC under Anna University, Chennai. He worked as a Broadcast Engineer Trainee (Design Engineer) at Benchmark Broadcast Systems for a span of one year. He has published 4 research publications in refereed international journals and 4 papers in proceedings of National Conferences. His current research interests are Frequency Selective Surfaces, Electromagnetic Shielding, Microwave Engineering and Transmission Lines.



Ms. R. Hemalatha, has joined as Assistant Professor in the Department of ECE in December 2013. She has 5 years of teaching experience and has been at SSNCE (ECE) as JRF from January 2011. Before joining SSN she worked at Rajalakshmi Engineering College, Chennai and AKCE, Srivilliputhur. She received her B.E. from PGPCET, affiliated to Periyar University and M.E. from SSNCE, with College Gold medal and currently pursuing her Ph.D. at Anna University, Chennai. Her research interests include Wireless Sensor Networks, Solar Energy Harvesting Techniques, Compressive Sampling applications and Image Processing. She has two publications in International Journals and twelve publications in National and International level conferences.



Congratulations to **Dr. N. Venkateswaran**, Professor who has been elected as "Fellow, The Institution of Electronics and Telecommunication Engineers" in the



**Dr. S. Radha**, Professor & Head, ECE Department, visited Avanthi Institute of Engineering and Technology, Hyderabad and Govt. College of Engineering, Amaravathy as NBA

**FACULTY RESEARCH HIGHLIGHTED ON JOURNAL COVERS**

Our faculty members and research scholars jointly published their research work in various refereed National & International journals and conference proceedings.

- Florence Monica and Venkateswaran, “Algorithm for Image Scale-Up using Sparse Signal Processing”, International Journal of Electronics and Communication Technologies (IJECT), vol.4, no.2, pp. 150-155, Jul. 2013.
- Edna Elizabeth N., Subasree S., and Radha S., “Enhanced Secure Key Management Scheme for MANETs”, WSEAS Transactions on Communications, paper accepted in the month of Aug. 2013, ISSN No. 1109-2742.
- Aasha Nandhini. S, R. Kishore, S. Radha, "A Novel Frequency Hopping Spread Spectrum Technique using Random Pattern Table for WSN", Ad Hoc and Sensor Wireless Networks - AHSWN (Accepted for Publication) Vol 0., pp 1-21., ISSN NO: 1551-9899 EISSN1552-0633.
- S. J. Sugumar and R. Jayaparvathy, "An early warning system for elephant intrusion along the forest border areas", Current Science Journal, Vol. 104, No. 11, pp 1515-1526, Jun. 2013.
- Prabagarane N, Yuvika Ashwina R, Sabarish Karthik, Prasaanth M, “Performance of multi user transmitter preprocessing assisted MIMO system over correlated Frequency selective channel”, Elsevier -Physical Communication , Vol. 7, Jun. 2013, pp 61-72. ISSN No: 1874-4907 .
- C. Y. Tan and K. T. Selvan, “A circularly polarized conical horn with an Inserted Metallic Cone-Sphere,” IEEE Antennas and Propagation Magazine, Vol. 55, No 3, pp 146-154, Jun. 2013, ISSN NO: 1045-9243.
- G. Gnanagurunathan and K. T. Selvan, "Artificial magnetic conductors on wideband patch antenna", Progress In Electromagnetics Research Letters, Vol. 36, 9-19, Jun. 2013, ISSN NO: 1937-6480.
- K. J. Jegadish Kumar, K. Chenna Kesava Reddy, S. Salivahanan, S. D. Karthik, V. Praveen, "Exclusive -128 Bit NLFSR Stream Cipher for Wireless Sensor Network Applications," International Journal of Engineering and Technology, Vol. 5, No.5, Oct-Nov. 2013, pp 3668-3675.
- Y. A. V. Phamila and R. Amutha, “Discrete Cosine Transform Based Fusion of Multi Focus Images for Visual Sensor Networks”, Signal Processing (Elsevier), Vol. 95, Feb 2014, pages 161–170, ISSN No: 0165-1684.
- Y. A. V. Phamila and R. Amutha, “Low complexity energy efficient very low bit-rate image compression scheme for wireless sensor network”, Information Processing Letters (Elsevier), Vol. 113, No.18, Jun. 2013, pp 672–676, ISSN No: 0020-0190.



**FACULTY RESEARCH HIGHLIGHTED ON JOURNAL COVERS**

- Y. A. V. Phamila and R. Amutha, “Low-complex energy-aware image communication in visual sensor networks”, Journal of Electronic Imaging, 22 (4), 041107, Oct 2013.
- S. Ganesh, R. Amutha (2013) ‘Efficient and Secure Routing Protocol for Wireless Sensor Networks through SNR based Dynamic Clustering Mechanism” Journal of Communication and Networks, Vol. 15, No. 4, pp 422 - 429 ,Aug. 2013 ISSN: 1229-2370 (Print), ISSN: 1976-5541 (Online).
- S. Ganesh and R. Amutha ‘Efficient and Secure Routing Protocol for Wireless Sensor Networks-results and discussions” Journal of theoretical and applied information technology, Vol. 57, No. 2, pp 191-208, Nov. 2013, ISSN No: 1992-8645.
- K. S. Vishvakshan, R. Seshasayanan and Yuvaraj Krishnamoorthy, “Performance of joint transmit scheme assisted multiple-input multiple-output multi-carrier IDMA system”, Elsevier Journal of computers and Electrical Engineering, 2013, Vol.39, Jun. 2013, pp.984-995.
- S. Joseph Gladwin, S. Salivahanan, VLSI Implementation of Channel Estimation for MIMO-OFDM Transceiver, American Journal of Applied Sciences, Vol. 10, Issue 10, pp 1280-1286, 2013 DOI : 10.3844/ajassp, Sep. 2013.1280.1286.
- R. Hemalatha and S. Radha, “Efficient Image Transmission over WWSN’s Using Two Measurement Matrix based CS with Enhanced OMP” International Journal of Distributed Sensor Networks under the special issue on Recent Advances in Wireless Visual Sensor Network, Dec. 2013.
- R. Hemalatha, R. Ramaprabha and S. Radha, “Modeling of Photovoltaic Charging System for the Battery Powered Wireless Sensor Networks”, in Springer Lecture Notes in Electrical Engineering, 2013, pp. 225-235.

**STUDENTS' CORNER****TECHNICAL ACHIEVEMENTS**

Faculty members of our department motivate the students to involve in research activities. As a result, our students are doing quality projects and they publish their research findings in notable journals and conferences. Few publications are listed below:

- R. Jansi, Y. A. V. Phamila, and Dr. R. Amutha, published a paper titled “Color Image Interpolation using Optimal Edge Detector” in the International Journal of Innovation and Applied Studies, Vol. 3, No. 3, pp. 813-819, Jul. 2013.
- N. Annamalai Gokkul, A. Ashok Kumar, S. Hemant Kumar and Dr. M. Ramakrishnan published a paper titled “Performance Improvement of OFDM using Hybrid PAPR Reduction Technique” in the 4<sup>th</sup> International conference on “Computing, Communication and Networking Technologies” - ICCCNT 2013 organized by Vivekanandha College of Engineering for Women held during 4<sup>th</sup> – 6<sup>th</sup> July 2013.

- M. P. Actlin Jeeva, B.Ramani, and P. Vijayalakshmi presented a paper titled “Performance Evaluation and Comparison of Multilingual Speech Synthesizers for Indian Languages” in the 3rd International Conference on Recent Trends in Information Technology (ICRTIT 2013) organized by MIT, Chennai during 25<sup>th</sup> – 27<sup>th</sup>, Jul. 2013.
- M. Anbu Swarna Priyanka, V. Sherlin Solomi, Dr. P. Vijayalakshmi, and Dr. T. Nagarajan (Prof & Head/IT) published a paper titled “Multiresolution Feature Extraction (MRFE) Based Speech recognition System” in the 3rd International Conference on Recent Trends in Information Technology (ICRTIT 2013) organized by MIT, Chennai during 25<sup>th</sup> – 27<sup>th</sup>, Jul. 2013.
- Jayakumar, and S. Hanis published a paper on “Speckle noise reduction of SAR images using FIR multiscale GMAP median filter” at the 3rd International Conference on Recent trends in Information Technology (ICRTIT 2013) organized by MIT chennai during 25<sup>th</sup> – 27<sup>th</sup>, Jul. 2013.
- A. Loganathan, R. Hemalatha and Dr. S. Radha, published the paper titled “Comparison of encoding techniques for transmission of image data obtained using compressed sensing in wireless sensor networks” in the Third International conference on Recent Trends in Information Technology (ICRTIT 2013) held at Madras Institute of Technology, Anna University during 25<sup>th</sup> - 27<sup>th</sup>, Jul. 2013.
- S. Harish, R. Hemalatha and Dr. S. Radha published the paper titled “Image recovery from reduced sparse measurements by compressed sensing based on wavelet transform” in the Third International conference on Recent Trends in Information Technology, ICRTIT 2013, held at Madras Institute of Technology, Anna University during 25-27, Jul. 2013.

**Ms. E. Anusha**, presented a paper titled "Estimation of gain enhancement in superstrate - loaded microstrip patch", authored by E. Anusha, Dr. K. T. Selvan and P. H. Rao in the 2013 Asia-Pasific conference on antennas and propagation (APCAP2013), held during Aug. 5<sup>th</sup> - 7<sup>th</sup>, at Chiang, Mai, Thailand.



## STUDENTS INTERNSHIPS/INDUSTRIAL VISIT/INDUSTRIAL EXPERTS TALK

To understand and update the recent happenings in the industry, students are encouraged to undergo internships and visit industries periodically. Apart from these activities, we create a platform for the students to interact with experts from the industry under the activity “industrial expert’s talk”. Few activities under these categories are listed below:

1. Mr. C. P. Aswin, (IV ECE A) has undergone internship at Reliance Communications Limited on “Wimax wireless access technology” from 24<sup>th</sup> Jun. 2013 to 12<sup>th</sup> Jul. 2013.
2. Ms. Alagu Sanjana, Ms. Indhu Vadhani, Ms. Mrinalini Anand (III year ECE A) have undergone internship at National Institute of Ocean Technology (NIOT) on “Underwater Electronics and Communication” from 24<sup>th</sup> Jun. 2013 to 2<sup>nd</sup> Jul. 2013.



3. First Year ME (CS) students visited SAMEER – CEM Centre for Electromagnetics on 22<sup>nd</sup> and 26<sup>th</sup> Nov. 2013. Dr. K. T. Selvan, Ms. S. Esther Florence and Mr. M. Gulam Nabi Alsath, accompanied and guided the students.
4. The students of III year ECE A & B visited CSIR, Taramani, Chennai on 26<sup>th</sup> Sep. 2013. They were accompanied by Dr. R. Kishore and Dr. K. S. Visvaksenan.
5. The II year ECE students visited District Telecom Training Centre, East Tambaram, Chennai on 3<sup>rd</sup> Oct. 2013. Mr. S. Joseph Gladwin and Ms. K. Muthumeenakshi accompanied and guided the students.
6. Ms. Radha Goverdhan, an IT consultant Chennai, delivered a guest lecture on "Software Methodologies - Agile and SCRUM" on 26<sup>th</sup> Sep. 2013 to IV yr ECE and all PG students.
7. Mr. Sam Karikalan, Manager, Broadcom Corporation in Irvine, California, gave a speech on "The future of mobile electronics" on 5<sup>th</sup> Jul. 2013 to III yr, IV yr UG and all PG students.
8. Mr. J. Santhanakrishnan, retired Deputy General Manager (EDP) BSNL, delivered guest lecture on "1G to 5G" on 25<sup>th</sup> Jul. 2013 at Mini Auditorium, SSNCE. The program was organized by SSN-IETE student forum.
9. Mr. Gigeo, Partner & Managing Director, Princeton Review, Chennai, addressed the students of ECE department on the topic "Higher Education Abroad" on 8<sup>th</sup> Oct. 2013.

### I-CELL ACTIVITY

Activities of innovation-cell (I-Cell) of our department are truly commendable. Many students from final year and third year organized technical sessions under the banner of I-Cell. To name a few:

1. Ms. Lakshmi Krishnan and Ms. M. Lekha (Final year ECE) delivered a talk on "Introduction to project domains" to the third year students on 11<sup>th</sup> Jul. 2013.
2. Mr. Hariharan and Mr. John Selvin (Final year ECE) delivered a talk on "Introduction to MATLAB" to the second year students on 18<sup>th</sup> Jul. 2013.
3. Mr. Niranjana swaminathan and Mr. M.G. Karthik (Final year ECE) discussed on the topic "Higher studies and Internship" with the second and third year ECE students on 8<sup>th</sup> Aug. 2013.
4. Ms. Namitha (Final year ECE) delivered a talk titled "Wireless communication and OFDM" to second and third year ECE students on 12<sup>th</sup> Sep. 2013.

### TECHNICAL SYMPOSIUM

Mr. J. Santhanakrishnan, Retired Deputy General Manager (EDP) BSNL, inaugurated the activities of Association of Electronics and Communication Engineers for the academic year 2013-14, on 25<sup>th</sup>, Jul. 2013. Association of Electronics and Communication Engineers conducts Orbitce – a national level students technical symposium every year. The event enables the students to show case their organizational capability, managerial skills in organizing and conducting a mega technical event. This year the event was organized on 30<sup>th</sup> Aug. 2013. Dr. P. Siva Kumar, Director, CVRDE (DRDO), Avadi, Chennai graced the occasion as chief guest and delivered the key note address. The chief guest also released the annual technical magazine "CONFLUENCE", during the occasion. Events like Paper presentation, Circuitrix, Project display, Mathomania, Programming, M-Guru, Technocrat, Crack to talk, Be a Prof, Mock placement etc. were organized. Orbitce2K13 also had workshops on Android Applications and Cypress PSOC. Nearly one thousand students benefited from the workshops.

Over 2000 students from various colleges participated in the various events. Winners of the events were awarded with cash prizes total worth of Rs. 70,000.



Figure - 4: Orbitce-2013 - Technical Symposium

### TI DESIGN CONTEST 2013

Texas Instruments (TI) India University Program conducted “Texas Instruments Innovation Challenge: India Analog Design Contest 2014 [College-Level]” for the undergraduate and postgraduate students of SSN College of Engineering

on 1<sup>st</sup> Aug. 2013. The contest presented a challenge to the students to use TI’s semiconductors such as embedded processors and analog ICs in creative ways to solve system-level design problems. Dr. R. Rajavel, acted as a faculty mentor on behalf of SSNCE for the event. 167 students from ECE, EEE & BME participated in this event and a team of III year ECE students, Alakar Srinivasan, N. Arun Kumar, S. Kaushik and Febin Steve Jose won the first price.



Figure - 5: TI - Technical Design Contest

### INTERNAL FUNDING FOR STUDENTS' PROJECTS

Our management encourages undergraduate and post graduate students to do quality research through internal funding to procure necessary hardware and software. Following is the list of internal funded projects with the amount sanctioned by our management.

S. No	Students Name	Title of the Project	Guide	Sanctioned Amount (Rs.)
1	S. Dhivya	Design, Analysis and Implementation of Microwave Power Amplifier for Biomedical Devices.	Dr. B. S. Sreeja	20, 000
2	T. Sivanesan	MEMS based design of energy harvesters for Wireless Sensor Nodes	Dr. B. S. Sreeja	25, 000
3	J. Harrison Kurunathan	An extended robotic arm for defence and rescue applications	Dr. R. Jayaparvathy	25, 000
4	M. Monika & N. Priyanga	Performance measurement and comparison of microstrip bandpass filter topologies for wireless applications	Mr. S. Karthie	20, 000
5	P. Sridharan	Design of Microwave Tunable Bandpass Filter in the range of 2-15 GHz	Dr. B. S. Sreeja	20, 000



## PLACEMENT RECORDS

ECE Department placement activities are very appreciating. From Aug. to Nov. 2013 around 16 companies have visited our campus. The major recruiters include CTS, WIPRO, INFOSYS, MuSigma, Zoho Corporation, Latent View, Lister Technologies, Dell, Ford etc. More companies are in pipeline for the recruitment process for the next three months. The department wishes more than 98% of placement before the end of this academic year. Post graduate students from Applied Electronics, Communication systems and VLSI have also started their account of placement.






Total No. of Companies visited : 16



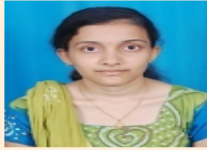







Results Declared	: 14
Total No. of Candidates	: 129
Total No. of offers received	: 104
Total No. of Offers received (including dual placement)	: 162
Placement percentage	: 80.62 %
Salary package range (lakhs/annum)	: 8.2 (Indian Navy) to 3.00 (L&T ECC)

Fifteen of our PG students are placed in reputed companies. Few more students are working towards entering into core companies. Most of our PG students are interested in doing research and serve the young minds by joining teaching community in reputed universities and colleges.

## UNIVERSITY RANK AT ECE DEPARTMENT







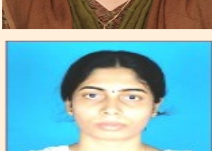


Hard work and determination of students are proved by securing the university ranks. We, the members of the ECE department are very proud to say 16 of our undergraduate students secured university ranks declared by Anna University. Under Post Graduate student's category, 13 students of Communication Systems course got University ranks including 2nd and 5th rank. Students from Applied Electronics and VLSI secured 2 and 7 University ranks respectively.

S. No	Name of the Student		UG / PG	University Rank
1	UMAYAL M		UG	12
2	VARDHNEE RR		UG	14
3	AKSHYA M		UG	23
4	AKSHAY RAMACHANDRAN		UG	29
5	PRIYA G		UG	32

S. No	Name of the Student		UG / PG	University Rank
6	SRINIDHI S		UG	34
7	ALAGU ALAGAPPAN		UG	35
8	ROSHANI SHETTY K		UG	39
9	SNEHA SRINIVASAN		UG	39
10	ASHWATH SRIRAM		UG	40
11	SARANYA J		UG	40
12	AISHWARYA D		UG	41
13	DINESH B		UG	42
14	ROHIT RAJA		UG	44
15	SUSHMA S		UG	47



S. No	Name of the Student		UG / PG	University Rank
16	NANDITA ASHOK		UG	48
17	REKHA SHARON P		PG - A. E	26
18	RONISHA PRAKASH A		PG - A. E	29
19	ACTLIN JEEVA M P		P G - CS	2
20	FLORENCE GNANA POOVATHY J		PG - CS	5
21	ANBU SWARNA PRIYANKA M		PG - CS	9
22	AISHWARYA N		PG - CS	10
23	JANSI R		PG - CS	11
24	FLORENCE MONICA D		PG - CS	12
25	NIRANJANA PRIYADARSHINI M		PG - CS	21

S. No	Name of the Student		UG / PG	University Rank
26	LOGANATHAN A		PG - CS	24
27	ISHWARYA R		PG - CS	24
28	NARMATHA M		PG - CS	24
29	ASHWINI K		PG - CS	33
30	GODWIN JACOB D		PG - CS	41
31	VAISHNAVI R		PG - CS	41
32	ANAPAGAMINI S A		PG - VLSI	20
33	ESAI AMUTHAVANI G		PG - VLSI	21
34	THARANNUM MUSHEER		PG - VLSI	23
35	RAJARAJA R		PG - VLSI	24



S. No	Name of the Student		UG / PG	University Rank
36	SRIKANTH K		PG - VLSI	32
37	RAMESH S		PG - VLSI	32
38	MANGAYARKKAR ASI M		PG - VLSI	37

Kris Shrishak, Nandha Kishore of Final year ECE and Vignesh Sridharan - IIIyr ECE & M. S. Karthik - IIIyr EEE (2 teams) participated in the KRS National Level Quiz, organized by Meenakshi College of Engineering and Technology, Kodambakkam. Kris Shrishak, Nandha Kishore of Final year ECE along with M.S.Karthik, EEE secured the 2nd place and won a cash award of Rs. 60, 000.

## SPORTS ACHIEVEMENTS

1. R. Sharmila (I Yr ECE) and M. Prasanth (I Yr MECH) have represented Tamilnadu Junior Basketball team and participated in the National Junior Basketball championship held at Cuttack during 1<sup>st</sup> Sep. 2013 to 3<sup>rd</sup> Sep. 2013.
2. R. Susmitha (II year ECE) has secured one gold medal and four silver medals in the Anna University inter zone swimming competition held at SDAT, Velachery on 12<sup>th</sup> Sep. 2013.
3. M.Geetha (III Yr ECE) secured Gold medal in High Jump event in the Anna University Zone 3 Athletic meet held at Anna University, Chennai on 21<sup>st</sup> Sep. 2013.
4. I. Gohulalakshmi (II ECE) participated in the Tamilnadu state ranking badminton tournament held at Rajapalyam between 11<sup>th</sup> Jul. 2013 and 12<sup>th</sup> Jul. 2013.

## SERVICE TO THE COMMUNITY

1. Blood donation camp is organized in association with Dhanvanthri Blood Bank on 14<sup>th</sup> Aug. 2013. This camp was organized by Mr. S. Joseph Gladwin. Around 310 units of blood were collected.
2. Youth Red Cross of SSN Institutions visited "Arul Illam", a home for orphans and underprivileged children, on 22<sup>nd</sup> Sep. 2013. Contributions in the form of clothes, stationary items, food etc., collected from faculty members and students are distributed to the needy. Our YRC coordinator Mr. S. Joseph Gladwin and 50 volunteers spent half day time at the home by teaching and entertaining the children.
3. As a part of SSN - NSS unit coordinated by Ms. P. Kaythry organized campaigns like cancer awareness, RTI awareness, books, clothes and toys donation, in our campus. Books and toys collected through these campaigns are donated to Govt. Hr. Sec. School Thiruporur, and kids of Aanganwadi at Kalavakkam respectively.

4. NSS Volunteers conducted a Science Exhibition for the benefit of Govt. Middle School students of Rayamangalam village on 9<sup>th</sup> Oct. 2013.

5. Walkathon and cycle rally were organized to create awareness on environmental pollution at Echengadu-B village by the NSS volunteers.



### FORTH COMING EVENTS

1. National conference on “Emerging Trends in Information and Communication Technologies” (NCETICT-2k14) on 18<sup>th</sup> Apr. 2014.

2. Symposium on "Electromagnetics and Higher Education" organized by IEEE Antennas and Propagation Society Madras Chapter in association with IIT-Madras & SSN College of Engineering is going to be held at IIT-Madras on 3<sup>rd</sup> Jan. 2014.

3. Two day Workshop on “Next Generation Wireless Networks” in the month of Feb. 2014.

This newsletter is produced by the Department of Electronics and Communication Engineering.  
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