Volume 6
Issue 1

Half-Yearly Newsletter of ECE

Impulse

Dec. 2016 -May. 2017

Impulse

Hello reader!

As inquisitive and impatient as you are to flip the pages, take a minute or two to know the energetic, enthusiastic team, who, with their astounding creativity and knowledge, left no stone unturned to achieve perfection to the tee with an eye for every miniscule detail. With them at the helm, you can be assured of a wonderful and an enjoyable read!

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MEET TEAM IMPULSE

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HIGHLIGHTS

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INVITED ARTICLE

Dr. P. Vijayalakshmi, Professor

LET'S CONVERSE ?! with a machine :-) SPEECH TECHNOLOGY has it all

Conversing with a machine, here, refers to human-machine (computer or smart-phone) conversation and is no longer a part of a sci-fi movie. Those who own i-phones might have conversed with "Siri" already. The questions here are "How?" and "Why?" Further as we are too inquisitive, we have few more questions, such as "Can we converse with them in our own mother tongue?"("Siri" speaks in English) and finally "Do we want the machine to understand what we are saying and communicate rather than converse?" In my view, communicating is a step towards building/converting a machine to be human-like. Speech technology along with spoken language understanding (SLU) does that all. This article will try answering the questions posed above in a simple and straightforward way.

Conversation here simply means exchange of words, whereas communication involves understanding the words uttered and to respond accordingly. This involves signal processing, machine learning, pattern recognition (we do all these in human-machine conversing as well) and incorporation of user's intention (unique to understanding). Socially, I would say it's all started when we became closer to machines rather than human beings. Because we were already communicating to human beings !! :-) Technically speaking we are always happy creating a machine that does our job either like us or more than us! Right now we are a step ahead towards making a machine that is almost like us. I mean mimicking the human being. Our generation (I mean those who are born in '70s) want the machine to converse and communicate and the current generation kids expect the "smart phone do everything". This article confines itself to the dream of "our generation".

1. Human-machine conversation system:

Coming to the technology involved in here, as mentioned earlier, conversation with a machine involves choosing relevant patterns using signal processing techniques, pattern recognition, and machine learning. In other words, speech signal rendered by a human being has to be processed in such a way that the machine learns it by finding and recognizing the

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patterns involved in the signal and answering back using patterns in the form of a speech signal. To put it precisely, having decided on the "relevant feature" using signal processing techniques, the "conversation" task involves recognizing the patterns, i.e., speech recognition task or speech-to-text conversion task. The "answering back" part may either be with or without understanding the text that makes communicating and conversing different and is performed by a text-to-speech (TTS) synthesizer. That is, the machine converses with human. Did I make it clear? If yes, let us unravel the secrets one by one.

Steps involved to unravel the secrets in human-machine conversation are:

•Speech Signal processing (extracting relevant patterns from speech)
•Machine learning via pattern recognition (training the machine)
•Speech-to-text conversion (speech recognition)
•Finding relevant answers
•Answering back by the machine (text-to-speech conversion)
•Speech Signal processing (extracting relevant patterns from speech)

Let us start the discussion with how we human beings recognize an object or other human beings. How do we distinguish one object/human being from the other? In other words, what is the characteristics that we basically look at an/a object/human being that differentiates it/him or her from the rest? Indeed, we look at a unique characteristic or a pattern (feature) that best represents the object/human being and at the same time best distinguishes from the rest of the category. How do we find that unique characteristics? For instance, we will not be able to distinguish a cat and a dog (distinguishing between two different classes) using the characteristics such as having four legs and a tail. However, orientation of the tail and shape of the paw may help us distinguishing, apart from the shape of the face which is highly unique to both cat and dog. Further, to distinguish one human being from another human being (distinguishing within the same class) height, colour, voice, age, etc., can be used. In other words, we combine the evidence derived from various features (multi-dimensional) of the given object or human being such as size, shape, colour, height, length, width, etc., to arrive at the "uniqueness".

In the same way, the first step towards human-machine conversation is extracting relevant pattern (feature) that best represents the human speech. The main objective of any feature extraction is to characterize an object to be recognized by measurements whose values are very similar for objects in the same category and very different for objects in different categories. This leads to the idea of seeking distinguishing features that are invariant to irrelevant transformations of the input[1]. For instance, cursive handwriting varies in complex ways in which same alphabet can be represented either in upper case or lower case or with any orientation. In speech recognition task, we want features that are invariant to translations in time and in overall amplitude. We want the features that are insensitive to duration of the

word. Not only different people talk at a different rate, but even a single speaker may vary in speech rate. Precisely, the feature that we choose should satisfy the conditions such that the chosen feature is (i) unique, (ii) capable of distinguishing a given class of object from other categories (between class variability), (iii) invariant to the variations within the same category (within class variability), and finally, (iv) invariant to irrelevant transformations.

Having decided on the "relevant feature", the "conversation" task involves (i) speech recognition, i.e., speech-to-text conversion, (ii) obtaining appropriate answers to the posed question or a statement and finally, (iii) answering back, i.e., text-to-speech conversion as shown in Fig. 1.

In the conversing task, the machine has to initially recognize human speech. Speech recognition traditionally means conversion of speech uttered by a human being to corresponding text by a machine. As speech recognition task corresponds to speech-to-text conversion, the relevant feature for this task would be finding respective vocal tract (lungs-to-lips) shape for each sound unit and associate them to corresponding text. This is found to satisfy all the above listed characteristics as well, making it "relevant". After finalising on the "relevant feature" as a first step towards the conversion task, the given speech signal is processed to extract the feature i.e., set of resonant frequencies generated for a given vocal tract shape using appropriate signal processing techniques. The main objective now is to associate each vocal tract shape to the corresponding text. Assuming we found "the relevant feature" and extracted the same we move on to the next step namely machine learning via pattern recognition. Let us teach the machine how to recognize our speech.

Let us revisit how we human beings recognize a cat, having known that it can be differentiated using its shape and size of the face or simply using "meow"!! as a feature. We associate "meow" to all the species (looks like there are more than 50 species in cat family) of cats, group them all and call (label) all of them as "cats" irrespective of the variability across them. Concisely, what we did here are, (i) extracted the relevant feature, (ii) found various species (variations) of the

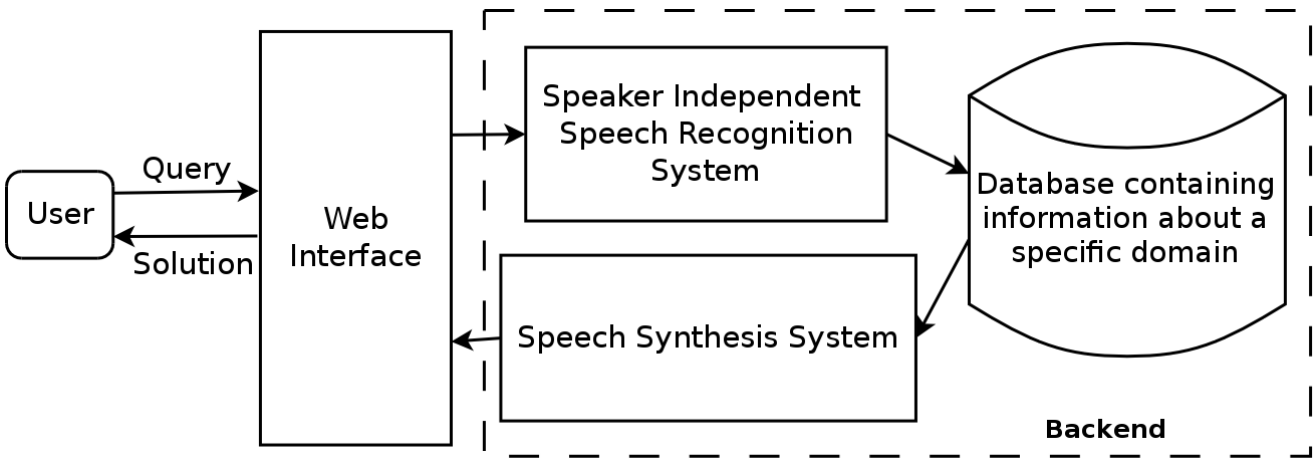

Fig. 1 Interactive voice response system (human/machine conversation)
Machine learning via pattern recognition (training the machine) & speech-to-text conversion

cats, (iii) grouped them all, and (iv) named all of them by a name for representation. What if we come across a group of animals that is totally unknown to us? For this as well we will do the first three steps except the fourth as we do not know the name of the animal. Do you know the former type in pattern recognition is called "Supervised learning" and the latter is "Unsupervised learning" technique? In the first case, we clustered and classified with a label, whereas for the second one we simply clustered without a label. Therefore, for speech recognition, having extracted the set of frequencies corresponding to each vocal tract shape, we have to find all the variations for the same sound unit and group them all and give a label for the respective sound unit. Is it supervised or unsupervised learning? Yes, you are correct. It is supervised learning. Using any of the following supervised learning techniques, such as Gaussian mixture modelling (GMM), Hidden Markov modelling (HMM) or Support vector machine (SVM), all the above four steps can be performed. That is, the machine can be taught :-) (trained) to identify a given pattern. Similarly, the machine has to be trained for multiple classes the way we are trained to identify cats, dogs, and the rest of the animals, birds, and other objects. When we come across any of these trained objects we match with the acquired knowledge and make a decision. That is, we are testing our trained knowledge. Similarly, if a machine comes across an unknown pattern it is now ready to recognize based on the trained patterns. In other words, the machine will extract the same pattern used during training, match it with already learnt pattern and make a decision. Speech is now recognized !! :-) by the machine, i.e., speech is converted into text. Amazing. We are not done yet. Because the machine now has to answer us back.

Finding relevant answers and Answering back (text-to-speech conversion)

As described earlier, to converse with a machine, for the questions posed by human beings that are converted into text by the previous step, the machine has to read the already available answers. In other words, it need not think. It has to fetch answers matching the questions posed and read the same. Like what Siri does. That is, the machine can be asked any questions by human beings, that has to be converted to text by a speech recognizer and it will look for answers from search engines and read it to us using a text-to-speech synthesiser. These kinds of systems are very helpful in information retrieval applications. To answer back, the machine now has to convert the relevant answers available in the form of text into speech. It may sound the inverse of the process that we described above. However, the text converted into speech is expected to sound as natural as human. In order to generate human-like speech we need to understand how we human produce speech. This might inspire us to train the machine accordingly. Let us get inspired by the speech production process described as follows.

We speak when we exhale. This creates a train of pulses with a periodic interval called pitch period.

We have tongue, teeth, jaws, palate (hard and soft) acting as articulators. The train of pulse as a source excites the cascade of filters (cavity resonators) formed by various articulatory positions. The filters accordingly respond and generate their own natural frequencies. For any given sound unit four to five such cavity resonators are formed and respective natural frequencies combine and produce a composite signal called speech. This needs fundamental frequency, specific duration for every utterance involved, and an intonation to convey the message. Therefore, given a text, the text-to-speech (TTS) synthesis process needs additional features such as duration of the sound unit, intonation of the speech, and pitch frequency apart from the vocal tract shape we derived for speech-to-text conversion. Therefore, the machine has to be trained with all these features as well to speak.

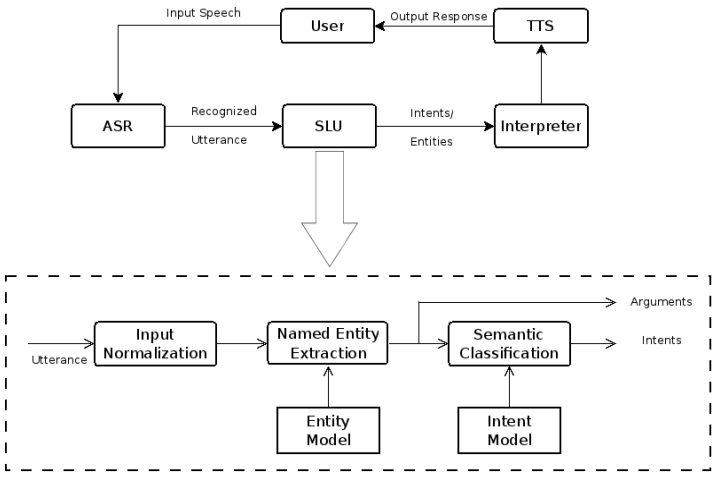

Fig. 2 Spoken language understanding system [2]

To train the machine to speak we need to collect large amount of speech data spoken by either a male or female, and extract the features such as fundamental frequency and its variations, possible duration of each sound units and variations, all possible vocal tract shapes for each sound unit and its variations, and finally the intonation and its variations. When a new text is given as an input, the machine will incorporate all the relevant features upon the text and bring in appropriate vocal tract shape on it and intonation such that it sounds as natural as a human being. Yes. :-) The machine now conversed with us.

Having given answer to the "How" part, the "Why" part involves specific applications to such conversation systems, especially in speech-enabled inquiry systems, such as customer care unit, railway inquiry, airline travel information system, interactive voice response system for agriculture, etc. There are three kinds of interactive systems namely, (i) machine-initiative, (ii) user-initiative and (iii) mixed-initiative systems. Machine initiative systems ask users specific questions and expects the user to input one of predetermined keywords or phrases whereas in user-initiative systems the users control the flow and the machine simply executes the users' commands. In mixed-initiative systems where user and machine both can assume control of the flow of the dialog. Although such systems are more complex they provide much more natural human/machine interaction. However, mixed initiative systems are designed to perform only one specific task such as airline traffic information systems (ATIS). Further if we want the machine to talk

to us in any language we have to teach the machine few language-specific information in the form of rules such as how we pronounce a particular sound unit based on the context. (Eg., put, but).

2. Human-machine communication system:

As discussed earlier, the "communication" part involves, apart from the above described modules, an additional module called Spoken Language Understanding (SLU). This means "targeted understanding of human speech directed at machines".A typical SLU-based system (refer to Fig. 2) involves an automatic speech recognizer (ASR) that transcribes the speech into text and passes that to the SLU unit. There are three major steps [2], [3] involved in spoken language understanding namely, text normalization, named entity extraction, and assigning semantic labels corresponding to user's intention. To understand the types of intents the users have, and how they express them, speech data is collected and human labellers label the intents and use it for training. These complete text data with appropriate semantic labels are passed on to the interpreter that responds to the user in the form of speech with the help of speech synthesizer. This means we communicated with a machine. :-)

I think I tried answering all the questions posed earlier and hope one day we will build machines to the expectations of our kids too !!!

That's all folks. Happy conversing :-)

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1. Richard O. Duda, Peter E. Hart, David G. Stork, "Pattern Classification", Wiley, 2001.
2. N. Gupta, G. Tur, D. Hakkani-Tur, Srinivas B, G. Riccardi and M. Gilbert, "The AT&T spoken language understanding system", IEEE trans. on audio, speech and language processing, Jan. 2006, pp. 213 - 222.
3. R. De Mori, F. Bechet, D. Hakkani-Tur, Michael McTear, G. Riccardi and G. Tur, "Spoken language understanding - interpreting the signs given by a speech signal" - IEEE Signal processing magazine, May 2008, pp. 50 - 58.

Further reading:

1. Rabiner, L. R. and Schafer, R. W., 'Digital Processing of Speech Signals', Prentice-Hall signal processing series, 1978.
2. Rabiner, L., Juang, Biing-Hwang and Yegnanarayana, B, 'Fundamentals of Speech Recognition', Pearson, India, 2011.
3. Douglas O'Shaughnessy, "Speech Communications: Human and Machine", second edition, Universities Press, 2009.
4. Shrikanth Narayanan and Abeer Alwan, "Text-To-Speech Synthesis: New Paradigms and Advances", Pearson education, Inc., 2005.

VISITS AND INTERACTIONS

1 Dr. S. Sakthivel Murugan, Asso.Prof. visited the **Clean Room Laboratory at National Physical Laboratory,** New Delhi on 8th Dec. 2016.

2 Dr. S. Sakthivel Murugan, Asso. Prof. participated in the **"Industry Academician Interaction"** held at **National Physical laboratory,** New Delhi held on 10th and 11th Dec. 2017.

3 Dr. R. Rajavel, Asso. Prof. and Ms. S. Kirubaveni, Asst. Prof. accompanied III year ECE students for 1 day industrial visit to **AIR (All India Radio), Mylapore** on 14th Feb. 2017.

4 On 13th Mar. 2017, Dr. S. Radha, Prof. & Head, Dr. R. Hemalatha, Asso. Prof. and Dr. S. Aasha Nandhini, PDF visited **Tamil Nadu Agricultural University, Coimbatore** and had discussion with Dr. Avudainayagam, Prof & Head/ ESD and Dr. R. Jayashree, Asso. Prof., Environmental Science Department regarding the project proposal on **disease detection for agricultural applications.**

5 On 28th Mar. 2017, Dr. S. Sakthivel Murugan, Asso. Prof. had interaction with Dr. S. Velvizhi, Principal Scientist, Fish for All Research and Training Centre, M. S. Swaminathan Research Foundation at **M. S. Swaminathan Research Center, Tharamani, Chennai.**

6 On April 18th April 2017, Dr. S. Sakthivel Murugan, Asso. Prof. had interaction with Prof. M. S. Swaminathan, Dr. V. Selvam, Executive Director, Dr. R. Rengalakshmi, Director, **JRD Tata Ecotechnology Center** and Ms. Nancy J Anabel Director - **Information Education Communication** and had technical discussions on projects and MoU.

7 Dr.B.S.Sreeja Asso. Prof. and Dr.R.Rajavel Asso. Prof. visited **ISRO Trivandrum** and discussed about possible collaboration between ISRO and SSN.

8 Dr. S. Radha, Prof. & Head, Dr. K. Muthumeenakshi, Asso. Prof., Dr. R. Hemalatha, Asso. Prof., Dr. S. Aashanandhini, PDF/ECE, Ms. R. Indhu, JRF/ECE visited **CSIR–CEERI, Pilani** for Project proposal discussion from 1st to 5th May 2017.

9 On 10th May 2017, Dr. S. Radha, Prof. & Head, Dr. B. S. Sreeja, Asso. Prof., Dr. S. Aashanandhini, PDF/ECE, Ms. R. Indhu, JRF/ECE visited **CSIR-CEERI, Chennai** and presented the 3 proposals to the Director. All scientists from CSIR-CEERI, Chennai were present during the meeting.

10 Dr. S. Radha, Prof. & Head, Dr. B. S. Sreeja, Asso. Prof., visited **IGCAR** on 19th May 2017 and presented the **BRNS Project proposals presentation** to Ms. Jemima Ebinezer, SC 'G', Head & Simulation Wireless Lab, IGCAR and to team of Scientists. The PI for the projects is Dr. B. S. Sreeja, Co-PI is Dr. S. Radha & PC is Ms. Jemima Ebinezer, SC 'G'.

11 Dr. S. Sakthivel Murugan, Asso. Prof. interacted with Dr. S. Paneerselvam, Prof. & Head, **Climate and Agro Research Center, Tamilnadu Agriculture University, Coimbatore** about smart irrigation and innovation on 22nd and 23rd May 2017.

EXPERT LECTURES

Prof. Sembiam R. Rengarajan, California State University, Northridge, USA, **"Maxwell's legacy"**, 19th Jan. 2017 for all second, third year UG, PG students and research scholars.

Prof. M. Anbarasu, Electrical Engineering Department, IIT Indore, **"Emerging Trends in Phase Change Memories"**, 30th Jan. 2017 for all PG students and research scholars.

Mr. R. Rajagopalan, Deputy CTO, Tata Elxsi, **"Strategy & Management"** 14th Mar., 2017 for third year UG and faculty members.

TALKS AT THE DEPARTMENT

Mr. Ashok Govindarajan, Principal Architect, Sasken Communication Technologies, Chennai, **"Contemporary issues in wireless communications"** 16th Mar. 2017 for final year UG, all PG students and research scholars.

Prof. Satish K. Sharma, Professor & Director, Antenna & Microwave Lab, San Diego State University, USA, **"MIMO and Massive MIMO Array Antennas"** 28th Mar., 2017 for all PG students and research scholars.

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FACULTY TALKS ELSEWHERE

1 Dr.Premanand V.Chandramani,Prof., **"EmbeddedSystem Interfaces"** in the Anna University approved 7-day FDTP program on "EE6602: Embedded Systems" held during December 12-19,2016 organized by Dept. of EEE, SSN College of Engineering.

2 Dr. K. T. Selvan, Prof., co-organized, and spoke at the IEEE AP-S Workshop on **"EM Education"** held at Bangalore on 19th and 20th Dec. 2016.

3 On 24th Dec. 2016, Dr. M. Gulam Nabi Alsath, Asso. Prof., **"Fundamentals of Antenna Arrays"** in the Anna University Sponsored Seven day FDP on "Antenna and Wave Propagation" held at Rajalakshmi Institute of Technology, Chennai.

4 Dr. V. Vaithianathan, Asso. Prof., **"IC Design & Circuits"** for the benefit of students and faculty of ECE Department, GRT Institute of Technology, Tirutani, Tamil Nadu on 25th Feb. 2017.

5 On 3rd Mar. 2017, Dr. R. Rajavel, Asso. Prof., delivered a lecture in National workshop on **real-time DSP using TMS320C6000 DSP processor** at Velammal Engineering College.

6 Dr.S.Sakthivel Murugan,Asso.Prof., **"Fundamentals of Communication systems"** at Velammal Engineering College, Chennai on 17th Mar. 2017.

7 Dr.K.T.Selvan, Prof., **"Antenna measurement considerations"** at the IEEE AP-S seminar on "Antennas for advanced communication applications" held at IIITDM, Kancheepuram on 27th Mar. 2017.

8 Dr. M. Anbuselvi, Associate Prof., **"Embedded Development Life Cycle"** in the Anna University approved 7-day FDTP program on "EE6602: Embedded Systems" held during December 12-19, 2016 organized by Dept. of EEE, SSN College of Engineering.

9 Dr.N.Venkateswaran,Prof., **"Modeling of Noise Sources"** at VIT University, organized by SAS Mathematics Division, Chennai on 3rd May 2017.

EVENTS ORGANISED

1. IEEE Sponsored three days FDP on "Antenna Design and Measurement Techniques"

Date: 1st – 3rd Dec. 2016

Coordinators: Dr. S. Radha, Prof. & Head, Dr. M. Gulam Nabi Alsath, Asso. Prof. and Mr. S. Ramprabhu, Asst. Prof.

Sponsors: IEEE Madras Chapter and IEEE ComSoc

Resource Persons: Dr. A.K. Shrivastav, Scientist F (Retd.), SAMEER, Dr. B. Sridhar, Prof./DACE, Dr. S. Esther Florence, Asso. Prof., Dr. M. Gulam Nabi Alsath, Asso. Prof., Mr. S. Ramprabhu, Asst. Prof. and Research scholars of CEG – Dr. K. P. Jayaram, Mr. N. Rajesh, Ms. V. Sangeetha

Participants: 30 external faculty members.

2. IEEE-INAE Symposium on Electromagnetic Education and Research

Date: 12th – 13th Dec. 2016

Coordinators: Dr. K. T. Selvan, Prof.

Co-coordinators: Dr. S. Joseph Gladwin, Asso. Prof., Mr. S. Karthie, Asso. Prof., Dr. K. K. Nagarajan, Asso. Prof., Dr. R. Kalidoss, Asso. Prof., Dr. S. Esther Florence, Asso. Prof., and Dr. B. S. Sreeja, Asso. Prof.

Sponsors: IEEE APS and SSNCE

Resource Persons: Dr. B.N. Suresh, President, INAE and Vikram Sarabhai Distinguished Professor, ISRO, Bengaluru; Prof. R. Shevgaonkar, IIT Bombay; Prof. Harishankar Ramachandran, IIT Madras; Prof. S.V. Kulkarni, IIT Bombay; Prof. Jawad Y. Siddiqui, University of Calcutta, Kolkata; Dr. Chandrakanta Kumar, ISRO, Bengaluru; Prof. Rowdra Ghatak, NIT Durgapur; Dr. D. Jahagirdar, RCI, Hyderabad; Dr. Bratin Ghosh, IIT Kharagpur; Dr. Jayaprakash Thakur, Intel, Bengaluru; Dr. K.P. Ray, SAMEER, Mumbai; Prof. R.K. Mishra, Berhampur University, Berhampur.

Participants: 25 from industry and academia

3. Three days National Workshop on "Internet of Things for Industrial Applications"

Date: 4th – 6th Jan. 2017

Coordinators: Dr. A. Gopal, CSIR; Dr. S. Radha, Prof & Head; Dr. R. Hemalatha, Asso. Prof.; Dr. R. Kishore, Asso. Prof.; Dr. K. Muthumeenakshi, Asso. Prof.; and Ms. S. Kirubaveni, Asst. Prof.

Sponsors: CSIR-CEERI and SSNCE

Resource Persons: Prof. Santanu Chaudhury, Director, CSIR-CEERI, Vinod Venkateswaran, Infosys Engineering Services, Dr.Solomon Raju Kota, CSIR-CEERI, Mrs.Kamala Krishnamurthy,BENCHMARK Vidya D, iNautix Technologies India Pvt Ltd., Mr.J.Suriya Prakash, CSIR-CEERI, Maneesh Jain, SRI, Prashant Kumar Sahoo, eXabit Systems Private Limited, Mr.Sathiyaraj, ViMicrosystems, Mr.M.Thirumalai, Siemens, Dr. K. Ganesan, VIT, Dr.R.Kishore, Asso. Prof., SSNCE

Participants: 70 from industry and academia

4. Teachers' Conclave on "Pursuing excellence in teaching"

Date: 7th Jan. 2017

Coordinators: Dr. K. T. Selvan, Prof., with excellent support from colleagues Dr. V. Kamaraj, Prof & Head/EEE, Dr. N. Venkateswaran, Prof., Mr. S. Karthie, Asst. Prof., Dr. K. K. Nagarajan, Asso. Prof., Dr. T. Thiruvenkadam, Asso. Prof., Dr. P. Venugopal, Asso. Prof./Maths, Ms. P. Kaythry, Asst. Prof., Ms. D. Umarani, Asst. Prof./EEE, Dr. T. Sree Sharmila, Asso. Prof./IT, Dr. R. Kalidoss, Asso. Prof., and Mr. V. Lingasamy, Research Scholar

Sponsors: SSN Good Citizenship Forum, Rajaji Centre for Public Affairs and ISTE SSN Chapter.

Resource Persons: Prof. M. Anandakrishnan, Former Vice Chancellor, Anna University; Shri B.S. Raghavan, IAS (R); Dr. K. Ganesan, Former Principal, Vivekananda College, Chennai; Prof. L.S. Ganesh, IIT Madras; Ms. Jayashree Nambiar, The School KFI, Chennai; Prof. S. Karmalkar, IIT Madras; Dr. N. Ramanathan, Amirta School of Engineering, Tiruvallur.

Participants: 64 from academia.






5. Two day workshop on "Comprehensive Hands on Training in MEMS Design Tools"

Date: 9th and 10th Feb. 2017.

Coordinators: Dr. S. Radha, Prof & Head; Dr. B. S. Sreeja, Asso. Prof.; Ms. S. Kirubaveni, Asst. Prof.

Resource Persons: Ms.C.Joshitha,JRF and Ms.Indhu,JRF

Participants: All interested students of UG and PG students

6. 3rd Curriculum Advisory Committee meeting

Date: 23rd Feb. 2017

Organiser: Department of ECE, SSNCE

Committee Members: Mr. V. Venkatesan, Programme Director, SAMEER; Dr. M. Meenakshi, Prof., CEG; Dr. C. Rajagopal, HCL; Mr. D. Karunadurai, Senior Embedded Software Engineer, Visteon & Alumnus were the external members for the meeting. Dr. S. Radha, Prof & Head,, Dr. Premanand V. Chandramani, Prof., Dr. R. Amutha, Prof., Dr. A. Jawahar, Prof., Dr. K. T. Selvan,
Prof., Dr. R. Kishore, Asso. Prof., Dr. K. Muthumeenakshi, Asso. Prof., Dr. S. Sakthivel Murugan,

Asso. Prof., Dr. R. Kalidoss, Asso. Prof., Mr. I. Nelson, Asst. Prof., Mr. C. Vinothkumar, Asst. Prof., Dr. S. Aasha Nandhini, SRF & Alumnus attended the same as internal members.

7. IEEE International Conference on Wireless Communications, Signal processing and Networking (WiSPNET 2017)

Date: 22nd – 24th Mar. 2017

Conference Chair: Dr. S. Radha, Prof. & Head

Organizing Chairs: Dr. R. Kishore, Asso. Prof. and Mr. N. Prabagarane, Asst. Prof. Number of Submissions: 1450 submissions and 600 papers were accepted. The acceptance ratio is around 41.3%.

Number of registrations: 561

Around 500 papers were presented in 63 technical sessions conducted in four parallel tracks in three days.

Overseas Speakers: Dr. Lajos Hanzo, University of Southampton, UK; Dr. Ozan Tonguz, CMU; Dr. David Akopian, University of Texas at San Antonio, Dr. Giacomo Morabito, University of Catania, Italy; Dr. Raed Mesleh, German Jordanian University, Jordan were the Guest of Honors of the Inaugural function.

Domestic Speakers: Dr. Kota Solomon Raju, CSIR-Pilani; Mr. Viyay Anand, Aricent Technologies; Mr. Vishal Sharma, Intel; Dr. Santi P. Maity, IIEST and Mr. Vishwas Lakkundi, IOT specialist and consultant.

Workshops: New Technologies in 5G and Visible Light Communications

Panel Discussion: 5G and Internet of Things.

8. One day workshop on "Python programming for embedded applications"

Date: 10th Apr. 2017

Coordinators: Dr. K. J. Jegadish Kumar, Asso. Prof., Dr. S. Ramprabhu,Asso. Prof. & Mr. W. Jino Hans, Asst. Prof.

Resource Persons: Mr. M. S. Balamurugan, Asst. Prof., Department of ECE, VIT Chennai

Participants: All first year PG students

9. One day workshop on "Hands on Introduction to Arduino for Beginners"

Date: 20th Apr. 2017

Coordinators: Dr. R.Amutha, Prof. & Dr. K. Muthumeenakshi, Asso. Prof.

Sponsors: SSNCE

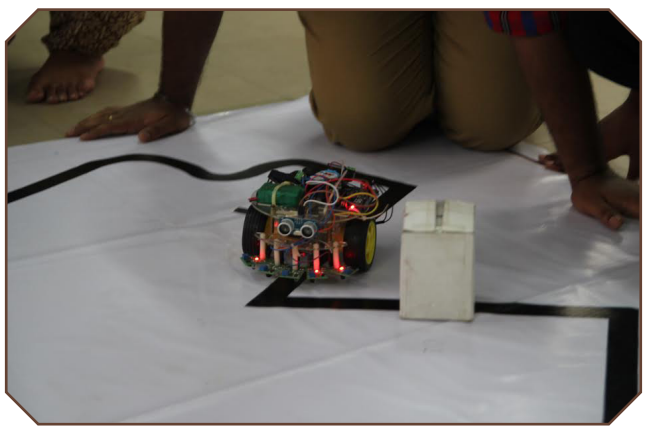
Resource Persons: Internal faculty Dr. R. Amutha, Prof. & Dr. K. Muthumeenakshi, Asso. Prof.

Participants: First year PG (Applied Electronics and Communication Systems)

IISF

WiSPNET

IoT WORKSHOP



EVENTS ATTENDED

Dr. Premanand V. Chandramani, Prof., Dr. M. Gulam Nabi Alsath, Asso. Prof., Mr. S. Ramprabhu, Asst. Prof., Ms. S. Kirubaveni, Asst. Prof., Dr. S. Joseph Gladwin, Asso. Prof., Mr. V. Lingasamy, Research Scholar participated the One day Teacher's conclave on "Pursuing excellence in teaching" organized by GCF SSN College of Engineering, RCPA Chennai and ISTE SSNCE chapter at SSN College of Engineering on 7th Jan. 2017.

Ms. S. Hanis, Asst. Prof, attended a two-day workshop on "Machine Learning Techniques for Image-Based Applications" organized by Department of Information Technology, SSNCE during 9-10 Feb. 2017.

Dr. S. Radha, Prof. & Head, attended the Leadership Conclave held at SSNCE on 18th Feb. 2017.

Dr. B. S. Sreeja, Asso. Prof. attended a one week "QIP Short Term Course cum Workshop on Industrial Applications of Terahertz Radiation" during 27th Mar. to 02nd Apr. 2017 at IIT Kharagpur.

Dr. A. Jawahar, Prof., Dr. V. Vaithiyanathan, Asso. Prof., and Dr. S. Sakthivel Murugan, Asso. Prof. attended one week faculty development workshop on "Internet of Things" at NIT Warangal from 8th to 13th May 2017.

On 17th May 2017, Dr.N.Venkateswaran,Prof., attended the 49th World Telecommunication &Information Society Day celebrated by Chennai Centre of IETE at The Institution of Engineers Hall, Chepauk, Chennai.

PROFESSIONAL ROLES AND RECOGNITIONS

1. Dr. R. Jayaparvathy, Prof., was appointed as Subject Expert for the PhD viva-voce examination of Anna University at Adiparasakthi Engineering College, Melmaruvathur on 20th Dec. 2016.

2. Dr. S. Radha, Prof. & Head, conducted Ph.D. viva voce examination for her full-time research scholar Ms. S. Aasha Nandhini, SRF on 23rd Dec. 2016.

3. Dr. Premanand V. Chandramani, Prof., attended the DC meeting of Mr. N. Vinodhkumar, student of Dr. R. Srinivasan, Prof,/IT on 26th Dec. 2016. He also attended the PhD Synopsis Meeting for Mr. V. Mohammed Zackriya at School of Electronics Engineering, VIT University, Vellore on 3rd Jan. 2017.

4. Dr. Premanand V. Chandramani, Prof., reviewed article for "IET Circuits, Devices & Systems".

5. Dr. M. Gulam Nabi Alsath, Asso. Prof., reviewed research articles submitted to IEEE Antennas and Wireless Propagation Letters, IEEE Transactions on Components, Packaging and Manufacturing Technology, IEEE Antennas and Propagation Magazine, IEEE Transactions on Industrial Electronics, and International Journal of Distributed Sensor Networks. He also reviewed manuscripts submitted to the International conference WiSPNET 2017 organized by SSNCE.

6. Dr. K. T. Selvan, Prof., reviewed papers for the IEEE Antennas and Propagation Magazine, IETE Journal of Research, IEEE Transactions on Antennas and Propagation and International Journal of RF and Microwave Computer Aided Engineering.

7. Dr. L. Nandita, Asso. Prof. reviewed a paper for IEEE Transactions on communications.

8. Dr. S. Radha, Prof & Head., acted as session chair in the International Conference on TIMA 2017, organized by MIT, AU, Chennai on 8th Jan. 2017.

9. Dr. Premanand V. Chandramani, Prof., served as Session chair in the International Conference on Computer, Communication, and Signal Processing

(ICCCSP-2017) organized by the Dept. of IT, SSN College of Engineering on 11th Jan. 2017.

10. Dr. M. Gulam Nabi Alsath, Asso. Prof., was appointed as a Subject Expert to conduct the viva-voce examination of Ms. V. Sangeetha, Research Scholar of Dr. K. Malathi, Asso. Prof., CEG on 12th Jan. 2017.

11. Dr. S. Radha, Prof & Head., attended DC meeting at SRM University on 12th Jan. 2017.

12. Dr. R. Hemalatha, Asso. Prof., conducted the first Doctoral Committee meeting for her part time research scholar Ms. M. J. Anitha at Dept. of ECE, SSNCE on 13th Jan. 2017.

13. Dr. S. Sakthivel Murugan, Asso. Prof., attended the board of studies meeting at Mahendra Engineering College, Salem on 28th Jan. 2017.

14. Dr. R. Amutha, Prof. conducted the confirmation meeting for her research scholar Ms. Hanis at SSN College of Engineering on 28th Jan. 2017.

15. Dr. R. Hemalatha, Asso.Prof., reviewed manuscripts for the International Conference on Power and Embedded Drive Control (ICPEDC 2017). She also reviewed manuscripts submitted to the International conferences WiSPNET 2017 and ICNETS2 organized by SSNCE and VIT University, Chennai Campus respectively.

16. Ms. G. Durga, Asst. Prof., reviewed a paper submitted to IEEE Transactions on Device and Materials Reliability.

17. Mr. S. Ramprabhu, Asst. Prof., reviewed a papers submitted to IET Electronic Letters and IEEE Transactions on Antennas and Propagation. He also reviewed manuscripts submitted to the International conferences WiSPNET 2017 organized by SSNCE.

18. Dr. R. Kishore, Asso. Prof., reviewed papers submitted to International Journal of Communication Systems, Wiley and Electronics and Telecommunications research Institute ETRI journal. He also reviewed manuscripts submitted to International conferences organized at Sri Sai Ram Engineering College and VIT University, Chennai Campus.

19. Dr. S. Radha, Prof. & Head, attended the IEEE Annual Meeting on 5th Feb. 2017.

20. Mr. S. Ramprabhu, Asst. Prof. coordinated the projects from ECE department for the SNF Leadership Conclave at SSN Innovation Centre on 17th Feb. 2017.

21. Dr. R. Amutha, Prof. and Dr. B. Ramani, Asso. Prof. reviewed manuscripts submitted to WiSPNET 2017 organized by SSNCE.

22. Dr. N. Venkateswaran, Prof. and Dr. Premanand V. Chandramani, Prof. reviewed manuscripts submitted to the International conferences WiSPNET 2017 and ICNETS2 organized by SSNCE and VIT University, Chennai Campus respectively.

23. Dr. V. Vaithianathan, Asso. Prof., reviewed a manuscript for the IEEE Transactions on Microwave Theory and Techniques.

24. Dr. R. Amutha, Prof., reviewed a paper for the journal KSII Transactions on Internet and Information Systems.

25. Dr. N. Venkateswaran, Prof., served as Session chair in the IEEE Sponsored 3rd International conference on Bio Signals, Images and Instrumentation organized by the Department of BME, SSN College of Engineering.

26. Dr.C.Annadurai,Asso.Prof.,reviewed papers submitted to the International Journal of Ad Hoc and Ubiquitous Computing published by Inderscience Publishers.

27. Ms. K. Anusudha, part time PhD Scholar of Dr. N. Venkateswaran, Prof., defended her dissertation and was conferred PhD from VIT University on 24th Mar. 2017.

28. Dr. N. Edna Elizabeth, Prof., chaired a session for the International conference ICNETS held at VIT University, Chennai on 25th Mar. 2017.

29. Dr. R. Amutha, Prof. conducted the synopsis meeting for her Part Time research scholar Mr.K.. Senthil Kumar at SSN College of Engineering on 25th Mar. 2017.

30. Dr. B. S. Sreeja, Asso. Prof. chaired two sessions of "QIP Short Term Course cum Workshop on Industrial Applications of Terahertz Radiation" held at IIT Kharagpur during 27th Mar. to 02nd Apr. 2017.

31. Dr. Premanand V. Chandramani, Prof., as a panel member attended the M.S. (by research) oral examination for Mr. E. Deepan (Supervisor: Dr. P. V. Ramakrishna), at CEG, Anna University on 30th Mar. 2017.

32. Dr. S. Esther Florence, Asso. Prof. reviewed a paper for Recent Advances in Electrical & Electronic Engineering, IEEE Sensors Journal and ACES Journal. She also reviewed manuscripts submitted to WiSPNET 2017 organized by SSNCE.

33. Dr. S. Radha, Prof. & Head, conducted the synopsis meeting for her research scholar Ms. J. Florence Gnana Poovathy at SSN College of Engineering on 13th Apr. 2017.

34. Dr. Premanand Chandramani, Prof. as DC member, attended the Comprehensive viva presentation of Mr. M. S. Balamurugan,

Supervised by Dr. S. R. S. Prabaharan (Professor & Dean, School of Electronics Engineering) at VIT, Chennai campus on 18th Apr. 2017.

35. Dr. S. Radha, Prof. & Head, conducted the synopsis meeting for her research scholar Ms. S. Kirubaveni, Asst. Prof., at SSN College of Engineering on 18th Apr. 2017.

36. Dr. S. Radha, Prof. & Head, conducted the PhD viva-voce examination for her research scholar Mr. I. Joe Louis Paul, Asst. Prof./IT at SSN College of Engineering on 24th Apr. 2017.

37. Dr. R. Rajavel, Asso. Prof. attended a DC meeting at Vels University, Pallavaram on 24th Apr. 2017 for the research scholar Mrs. Shirley Jocob, Faculty of National Institute of Speech & Hearing, Trivandrum, Kerala.

38. Dr. P. Vijayalakshmi, Prof. conducted the synopsis meeting for her research scholar Ms. M. P. Actlin Jeeva at SSN College of Engineering on 26th Apr. 2017.

39. Dr. S. Radha, Prof. & Head, as external expert evaluated the Phase II project of M.E. (CS) students at CEG, AU, Chennai on 26th Apr. 2017.

40. Dr. Premanand Chandramani, Prof., as external expert evaluated the final year projects Master of Design, M. Des (Communication Systems) students at IIITD&M, Kancheepuram on 28th Apr. 2017.

41. Dr. S. Radha, Prof. & Head, as DC member, attended the synopsis meeting of Ms. Ramya, Supervised by Dr. T. Rama Rao (Professor & Head, Dept. of ECE) at SRM University.

42. Dr. S. Radha, Prof. & Head, reviewed a paper for KSII Transactions on Internet and Information System.

43. Dr. M. Anbuselvi, Associate Prof., reviewed a manuscript for IEEE Transactions on Wireless Communications.

44. Dr. R. Amutha, Prof. reviewed a paper for Journal of Electronic Imaging (JEI).

45. Dr. N. Venkateswaran, Prof., conducted the synopsis meeting for his research scholar Ms. Madheswari, Asst. Prof./CSE, SSN College of Engineering.

46. Dr. N. Venkateswaran, Prof., was appointed as external expert to evaluate the Phase II project of M.E. students at CEG, AU, Chennai on 12th May 2017.

47. Dr. K. T. Selvan, Prof/ECE facilitated the signing of a MoU between SSN CE and San Diego State University, USA and the MoU was signed on 15th May 2017.

RESEARCH NEWS

PROPOSALS AND DISCUSSIONS

1. Dr. S. Radha, Prof. & Head, presented the project to DST-EMRF at New Delhi along with CSIR Scientist on 15th Dec. 2016.

2. Dr. L. Nandita, Asso. Prof., Dr. K. Muthmeenakshi, Asso. Prof., Mr. S. Ramprabhu, Asst. Prof. submitted a proposal to ARMREB titled "Ultra wide band wireless communication link for intra-tank communication: feasibility study" worth Rs.5.75 Lakhs.

3. Dr. S. Esther Florence, Asso. Prof., (PI) and Mr. R. Vimal Samsingh, Asst. Prof./Mech (Co-PI) got their project titled "Design and Development of a Computer Controlled System for the Production of Textile Antennas and Sensors" worth Rs. 30.96 Lakhs sanctioned by DST-SERB under Extra Mural Funding.

4. Dr. S. Radha, Prof. & Head, Dr. M. Gulam Nabi Alsath, Asso. Prof., and Mr. S. Ramprabhu, Asst. Prof., prepared and submitted a proposal to AICTE under MODROBS scheme.

5. Dr. K. T. Selvan, Prof. received sanction order for ISRO RESPOND project entitled "The feasibility of bandwidth enhancement of reflect array antenna at Ku-band for conventional and shaped beams" worth Rs.12.81 Lakhs

6. Dr. P. Vijayalakshmi, Prof. and Dr. T. Nagarajan, Prof. & Head/IT received their project proposal titled "Speech input speech output communication aid (SISOCA) for speakers with cerebral palsy" worth Rs.13,76,742 for 2 years under DST-TIDE scheme.

JOURNAL ARTICLES

1. Ms. C. Joshitha, Full-time research scholar, Dr. B. S. Sreeja, Asso. Prof., Ms. S. Sasi Princy, Full-time research scholar, Dr. S. Radha, Prof. & Head, "Fabrication and investigation of low actuation voltage curved beam bistable MEMS switch," Microsystems Technologies, Springer, pp. 1-14, Dec. 2016.

2. Ms. S. Aasha Nandhini, SRF, Dr. S. Radha, Prof. & Head, and Ms. S. Manimozhi, PG CS 2014-2016 batch),

"Compressed Sensing based Foreground Detection Vector for Object Detection in Wireless Visual Sensor Networks," Elsevier's AEUE-International Journal of Electronics and Communications, Dec. 2016.

3. Ms. S. Aasha Nandhini, SRF, Dr. S. Radha, Prof. & Head, Ms. P. Nirmala, JRF, and Dr. R. Kishore, Asso. Prof, "Compressive Sensing for Images using a Variant of Toeplitz Matrix for Wireless Sensor Networks," Journal of Real-Time Image Processing, Springer, Dec. 2016.

4. Ms. J. Florence Gnana Poovathy, Full-time research scholar/JRF, Dr. S. Radha, Prof. & Head, "Efficient Reconstruction of compressively sensed images and videos using non-iterative method," AEUE International Journal of Electronics and Communications, Elsevier, vol. 73, pp. 89 -97, Mar. 2017.

5. Dr. S. Aasha Nandhini, SRF, Dr. S. Radha, Prof. & Head, Dr. R. Kishore, Asso. Prof., "Efficient Compressed Sensing based Object Detection System for Video surveillance application in WMSN," Springer's Multimedia Tools and Applications, Jan. 2017.

6. Ms. R. Chithra Devi, Research scholar, Ms. N. Nafiza, (PG CS 2013-2015 batch), Dr. B. S. Sreeja, Asso. Prof., Dr. S. Radha, Prof. & Head, "A Novel performance diversity Modified Elliptical patch antenna for C-band applications," Microwave and Optical Technology Letters, vol.59 (2), pp. 408-415, Feb. 2017.

7. Dr. S. Sakthivel Murugan, Asso. Prof., "Study of vertical coherence in shallow water ambient noise," International Journal of Advances in Natural and Applied Science, vol. 10 (14), pp. 59-64, 2016.

8. Dr. S. Aasha Nandhini, SRF, and Dr. S. Radha, Prof. & Head, "Efficient Compressed Sensing-based Security Approach for Video Surveillance Application in Wireless Multimedia Sensor Networks," Elsevier's Computers and Electrical Engineering, Feb. 2017.

9. Mr. V. Lingasamy, Research scholar, Dr. K.T. Selvan, Prof., Dr. T. S. Bird (Antengenuity, Australia) and Mr. V. Venkatesan (SAMEER) "Uncertainty estimation in the two-antenna gain measurement of a 4.8-11 GHz double-ridged horn," IEEE Antennas and Propagation Magazine, vol. 59 (1), pp. 110-113, Feb. 2017.

10. Dr. L. Nandita, Asso. Prof., Dr. D. Jalihal, IITM, "Performance of p-Norm Detector in Cognitive Radio Networks with Cooperative Spectrum sensing in presence of malicious users," Wireless Communication and Mobile Computing, Wiley, 2017.

11. Dr. L. Nandita, Asso. Prof., Dr. D. Jalihal, IITM, Dr. Arun P Kannu, IITM, Dr. Srikrishna Bhashyam, IITM, "Finite-SNR Outage Analysis for MIMO Channels with Imperfect Channel State Information," Physical Communication (Elsevier), vol. 22, pp. 58-64,2017.

12. Mr. M. Edington Alex, Research scholar, Dr. R. Kishore, Asso. Prof., "Forensics framework for cloud computing," Elsevier's Computer and Electrical Engineering Journal, Feb. 2017.

13. Mr. P. Maran, Research scholar, Ms. K. Mythily, Dr. Premanand V. Chandramani, Prof., "Improving HRR in 3P-8P harmonic rejection mixer using modified input transconductance stage in hard switching mixer," Analog Integrated Circuits and Signal Processing, Springer, Feb. 2017.

14. Ms. K. Anusudha, Research scholar, Dr. N. Venkateswaran, Prof., and Ms. J. Valaramathi, "Selective Plane Replacement Watermarking and Cryptography – SPRWC," Indian Journal of Science and Technology, vol. 9, pp. 1- 7, Dec 2016.

15. Dr. K. J. Jegadish Kumar, Asso. Prof., and Ms. P. Kaythry, Asst. Prof., "FPGA based System on Chip IPTV set top box," International Journal of Computer Science and Network Security, vol 17(2), pp.no 113-118, Feb. 2017.

16. Dr. K. Muthumeenakshi, Asso. Prof. and Dr. S. Radha, Prof. & Head, "Spectrum Sensing in Cognitive Radios under Noise Uncertainty: Decision Making using Game Theory," International Journal of Smart Sensing and Intelligent Systems, vol.10 (1), pp. 146 - 173, Mar. 2017.

17. Ms. G. Durga, Asst. Prof., Dr. R. Srinivasan, Prof./IT, "Silicon nanotube SRAM and its SEU reliability," Superlattices and Microstructures (Elsevier), vol.106, pp. 129-138, May 2017.

18. Ms. G. Durga, Asst. Prof., Dr. R. Srinivasan, Prof./IT, "SET analysis of silicon nanotube FET," Journal of Computational Electronics (Springer), vol.16(2), pp: 307 - 315, Apr. 2017.

19. Ms. J. Florence Gnana Poovathy, Research scholar/JRF, Dr. S. Radha, Prof. & Head, "Noise performance of non-iterative compressed sensing based recovery algorithm: Surveillance applications," Multimedia Tools and Applications, Springer, 2017.

20. Ms. J. Florence Gnana Poovathy, Research scholar/JRF, Dr. S. Radha, Prof. & Head, "Non-Iterative Pseudo Inverse based recovery algorithm (NIPIRA) for compressively sensed images and videos," Wireless personal Communications, Springer, pp. 1-20, Apr. 2017.

21. Ms. S. Kirubaveni, Asst. Prof., Mr. R. Govindaraj, Research Scholar, Dr. S. Radha, Prof. & Head, Dr. P. Ramasamy, Dean (Research), Mr. R. Arokiyadoss, Research Center, "Experimental Study on Flexible ZnO Based Nanogenerator Using Schottky Contact for Energy Harvesting Applications," in IEEE Transactions on Nanotechnology, vol. 16, no. 3, pp. 469-476, May 2017.

22. Ms. S. Kirubaveni, Asst. Prof., Dr. S. Radha, Prof. & Head, Ms. M. Sudha, (PG AE 2014-2016 batch), "Analysis and Design of Power Conditioning Circuit for Piezoelectric Vibration Energy Harvester," IET Science, Measurement & Technology, 2017.

23. Ms. S. Manju, Research scholar, Dr. N. Venkateswaran, Prof., "An Efficient Feature extraction based segmentation and Classification of Antarctic Peninsula ICE shelf," International Journal of control Theory and applications, vol.10 (19), pp. 231-241, 2017.

24. Y. Panneer Selvam, Research Scholar, Elumalai, L., PG scholar, Alsath, M.G.N., Asso. Prof., Kanagasabai, Malathi, Faculty/CEG, S. Kingsly, Research Scholar, S. Subbaraj, Research Scholar, "A Novel Frequency and Pattern Reconfigurable Rhombic Patch Antenna with Switchable Polarization," IEEE Antennas and Wireless Propagation Letters , vol.16, 2017

25. Rajesh, N., Research Scholar, Kanagasabai, M., Faculty/CEG, Raju, S., Faculty/TCE, Abhaikumar, V., Principal, TCE, Deepak Ramprasad, Research Scholar/TCE, Alsath, M. G. N., Asso. Prof., "Design of Vivaldi Antenna with Wideband Radar Cross Section Reduction," IEEE Transactions on Antennas and Propagation, pp. 2102- 2105, vol. 65(4), 2017.

26. S. Subbaraj, Research Scholar/ CEG, V. S. Ramalingam, Faculty/Mech, M. Kanagasabai, Faculty/CEG, E. F. Sundarsingh, Asso. Prof, Y. P. Selvam, Research Scholar/ CEG and S. Kingsley, Research Scholar/CEG "Electromagnetic Nondestructive Material Characterization of Dielectrics Using EBG Based Planar Transmission Line Sensor," in IEEE Sensors Journal, vol. 16, no. 19, pp. 7081-7087, Oct.1, 2016

27. V. R. Samsingh, Asst. Prof./Mech, M. Kanagasabai, Faculty/CEG and E. F. Sundarsingh, Asso. Prof, "A Novel Metamaterial Enhanced Microwave Testing System for Bare PCB Substrates Using Image Rendering Approach," in IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 7, no. 2, pp. 285-291, Feb. 2017.

28. S. Hanis Asst. Prof, Dr.R. Amutha Prof," Double image compression and encryption using logistic mapped convolution and cellular automata", in Multimedia Tools and applications, Springer, pp: 1-16, April 2017.

29. Ms. B. Sakthi, II PG CS, Dr. S. Esther Florence, Asso. Prof., "EBG Backed Flexible Printed Yagi-Uda Antenna for On-Body Communication" in IEEE Transactions on Antennas and Propagation, May 2017.

30. Ms. G. Anushiya Rachel, Research Scholar/IT, Dr. P. Vijayalakshmi, Prof. and Dr. T. Nagarajan, Prof. & Head/IT, "Estimation of Glottal Closure Instants from Degraded Speech using a Phase-Difference-Based Algorithm", Computer Speech and Language (CSL), Elsevier, May 2017. DOI: 10.1016/j.csl.2017.05.008

31. Ms. M. Dhanalakshmi, Asst. Prof./ BME, Ms. T. A. Mariya Celin, JRF/ ECE, Dr. T. Nagarajan, Prof. & Head/ IT, Dr. P. Vijayalakshmi, Prof. "Speech-Input Speech-Output Communication for Dysarthric Speakers Using HMM-Based Speech Recognition and Adaptive Synthesis System", Circuits, Systems, and Signal Processing (CSSP), Springer, May 2017. DOI 10.1007/s00034-017-0567-9,

32. V. Sherlin Solomi, Research scholar/ IT, Dr. P. Vijayalakshmi, Prof., Dr. T. Nagarajan, Prof. & Head/IT, "Exploiting Acoustic Similarities Between Tamil and Indian English in the Development of an HMM-based Bilingual Synthesizer", IET Signal Processing, Vol. 11, Issue 3, pp. 332-340, May 2017.

CONFERENCE PRESENTATIONS

1. Dr. S. Sakthivel Murugan, Asso. Prof. presented the following papers in Young Scientist Conclave of 2nd India International Science Festival held at National Physical laboratory, New Delhi from 7th to 12th Dec. 2016.

- "Sensor based detection and modelling of submerged objects for conservation of ancient heritage" under the theme Digital India.
- "Development of high frequency underwater acoustic modem" under the theme Make in India.
- "Development of Geo acoustic Inversion model predicting sediment transport causing submergence", under the theme Swachh Bharat

2. Ms. S. Swathi, Full-time Research Scholar, Dr. S. Sakthivel Murugan, Asso. Prof., "Magnetic Induction based wireless underground sensor network system for agriculture automation" under the theme Innovative Agriculture Practices in Young Scientist Conclave of 2nd India International Science Festival held at National Physical laboratory, New Delhi from 7th to 12th Dec. 2016 and received Best Poster award.

3. Ms. R. Indhu, Full-time research scholar, Ms. Anni Steffi Mercy, RA, Ms. K. M. Shreemathi, II M.E. (VLSI Design), Dr. S. Radha, Prof & Head, Ms. S. Kirubaveni, Asst. Prof., Dr. B. S. Sreeja, Asso. Prof., "Design of a filter using array of pillars for particle

separation" Second International Conference on Large Area & Flexible Microelectronics: Wearable Electronics, organized by RV College of Engineering, Bangalore from 20th – 22nd Dec. 2016.

4. Mr. T. Balasubramanian, Mr. S. Krishnan, Mr. M. Mohanakrishnan, Mr. K. Ramnarayan Rao, Final year ECE students, Mr. C. Vinoth Kumar, Asst. Prof. and Ms. K. Nirmala, Asst. Prof./BME presented and published a paper titled "HOG Feature based SVM Classification of Glaucomatous Fundus Image with Extraction of Blood Vessels" in the 13th International IEEE India Conference INDICON 2016, IISc Bengaluru, Dec. 16th – 18th, 2016.

5. Mr. C. Vinoth Kumar, Asst. Prof., Dr. V. Natarajan, Mr. T. Balasubramanian, Final year ECE and Mr. K. Ramnarayan Rao, Final year ECE presented and published a paper titled "Slantlet Transform - Singular Value Decomposition Based Reversible Watermarking For Medical Images" in the International Conference on Engineering and Technology (IECT-2016), Karpagam College of Engineering, Coimbatore, Dec. 16th – 17th, 2016.

6. Ms. K. Nirmala, Asst. Prof./BME, Dr. N. Venkateswaran, Prof., Mr. C. Vinoth Kumar, Asst. Prof., and Ms. J. Shiny Christobel, II M.E. (CS), "Glaucoma Detection using Wavelet based Contourlet Transform" in the International Conference on Engineering and Technology (IECT-2016), Karpagam College of Engineering, Coimbatore, Dec. 16th – 17th, 2016.

7. Ms. I. Divya, Full-time research scholar, Dr. K. Muthumeenakshi, Asso. Prof., Dr. S. Radha, Prof & Head, "Ambient RF Energy Harvesting for Cognitive Radio Applications" International Conference on Advanced Computing and Communication Systems (ICACCS -2017), Sri Eshwar College of Engineering, Coimbatore, Jan. 6th – 7th, 2017.

8. Ms. R. Chithradevi, Research scholar, Dr. B. S. Sreeja, Asso. Prof., presented and published the following papers in the IEEE International Conference on Inventive Systems and Control (ICISC 2017) held at JCT College of Engineering and Technology, Coimbatore from 19th - 20th Jan. 2017.

1. "A Novel Dual Band Square patch Antenna with Better Isolation and Low Correlation"
2. "Design of a Symmetrical Stepped Slots Loaded Quad Band Antenna"

9. Mr. R. Prithviraj (UG Student), Dr. R. Rajavel, Asso. Prof., "MATLAB-GUI Model For Speech Separation Using Soft and Hard Mask," International Conference on Communication and Control Engineering, University College of Engineering, Villupuram, Dec. 29th - 30th, 2016.

10. Mr. R. Prithviraj (UG Student), Mr. R. G. Vigneshwaran (UG Student) Dr. R. Rajavel, Asso. Prof., "Simulink and DSP Processor Implementation of Monaural Speech Separation System Using Ideal Ratio Mask," International Conference on Communication and Control Engineering, University College of Engineering, Villupuram, Dec. 29-30, 2016.

11. Ms. J. Shiny Christobel, PG CS 2015-2017, Mr. C. Vinoth Kumar, Asst. Prof., "Feature based Breast Cancer Detection from Mammographic Images" International Conference on Emerging Trends in Engineering, Science & Sustainable Technologies, Periyar Maniammai University, Feb. 20 – 21, 2017.

12. Ms. G. Durga, Asst. Prof., Mr. V. Balamurugan, (PG VLSI 2015-2017), Dr. R. Srinivasan, Prof./IT, "Single Event Transient Analysis on Junctionless Silicon Nanotube Field Effect Transistor" IEEE International Conference on Information Communication & Embedded Systems (ICICES 2017) held at Chennai from Feb. 23 – 24, 2017.

13. Mr. K. Senthil Kumar, Research scholar, Dr. R. Amutha, Prof., and Ms. TLK. Snehapiriya, "Energy Efficient V-MIMO using Turbo Codes in Wireless Sensor Networks" 2nd IEEE International Conference on Computing and Communication Technologies (ICCCT'17) held at Sri SaiRam Engineering College, from Feb. 23 – 24, 2017.

14. Ms. M. Kanthimathi, Research scholar, Dr. R. Amutha, Prof., "Performance Analysis of Generalized Differential Modulation using DAPSK for Two-way Amplify-and-Forward Relaying System," 2nd IEEE International Conference on Computing and Communication Technologies (ICCCT'17) held at Sri SaiRam Engineering College, from Feb. 23 – 24, 2017.

15. Ms. M. Meryl Rino, (PG VLSI 2015-2017), Ms. G. Durga, Asst. Prof., "Performance Analysis of Single Event Double Upset Immune D-Latch," ICMR sponsored International Conference on Advanced Information and Communication Technology (ICAIC'17), held at Coimbatore on Feb. 24 - 25, 2017.

16. Ms. V.M. Daphne, (PG VLSI 2015-2017), Ms. G. Durga, Asst. Prof., "Study of Radiation in Static Random Access Memory Cell" ICMR sponsored International Conference on Advanced Information and Communication Technology (ICAIC'17), held at Coimbatore on Feb. 24 - 25, 2017.

17. Ms. R. Devi (PG VLSI 2015-2017), Dr. R. Hemalatha, Asso. Prof., and Dr. S. Radha, Prof. & Head, "Efficient Decision Support System for Agricultural Applications" 3rd IEEE International Conference on Advances

in Electrical, Electronics, Information, Communication and Bio-Informatics held at Prathyusha Engineering College, Tiruvallur from 27th – 28th Feb. 2017.

18. Ms. G. Padmalaya, Research scholar, Dr. B. S. Sreeja, Asso. Prof, Dr. S. Radha, Prof & Head, Mr. G. Raam Dheep, "Effective removal of hexavalent chromium ions using fabricated nanocomposite strip from aqueous media" International Conference on Nano Energy and Water, Dehradun, 2017.

19. Mr. PSSKP Sadagopan, PG VLSI, Dr. V. Vaithianathan, Asso. Prof., and Dr. R. Srinivasan, Prof./IT, "Performance Enhancement of Reconfigurable FET using Gate Work function, Inter-Gate Length and Inter-Gate Dielectric Permittivity" 4th International Conference on Signal Processing, Communications and Networking (ICSCN 2017) organized by Madras Institute of Technology, Anna University Campus, Chennai. The paper received the "Best Paper Award".

20. Ms. R. Indhu, JRF, Ms. K. M. Shreemathi, Ms. J. Anni Steffi Mercy, Dr. S. Radha, Prof. & Head, Ms. S. Kirubaveni, Asst. Prof., and Dr. B. S. Sreeja, Asso. Prof., "Design of a Bio-Filter for Particle Separation" 2nd International Conference on Devices for Integrated Circuit (DevIC) organized by IEEE KGEC Student Branch Chapter in association with IEEE EDS Kolkata Chapter and Dept. of ECE, Kalyani Government Engineering College, – from 22nd – 23rd Mar. 2017.

21. Ms. C. Joshitha, Full-time research scholar, Dr. B. S. Sreeja, Asso. Prof., and Dr. S. Radha, Prof & Head, "A review of Micropumps for Drug Delivery System," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

22. Dr. V. Vaithianathan, Asso. Prof., Mr. V. H. Eshwar, Mr. S. Kamalakannan and Mr. James De Raja, Final year ECE students (2013-2017), "All-Digital Phase Locked Loop (ADPLL) with an Up-Down Counter Using Simulink," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

23. Ms. V. Praveena, PG CS 2015-2017, Ms. P. Kaythry, Asst. Prof., Dr. R. Kishore, Asso. Prof., "Fountain code based error control technique in Wireless Body Area Networks," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

24. Ms. V. Nancy Priyanka, PG CS 2015-2017, Ms. P. Kaythry, Asst. Prof., Dr. R. Kishore, Asso. Prof., "Performance analysis of Recursive Luby Transform codes for error correction in Underwater Sensor network," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

25. Ms. A. A. Mutheeswari Subhagya, PG CS 2015-2017, Ms. P. Kaythry, Asst. Prof., Dr. R. Kishore, Asso. Prof., "LT code based Forward error control for wireless multimedia sensor networks," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

26. Mr. K. Sreeram, Mr. R. Suresh Kumar, Mr. S. Vinu Bhagavath, Final year ECE students (2013-2017 batch), Dr. K. Muthumeenakshi, Asso. Prof., and Dr. S. Radha, Prof. & Head, "Smart Farming - A Prototype for Field Monitoring and Automation in Agriculture," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

27. Ms. R. Indhu, JRF, Ms. J. Anni Steffi Mercy, Ms. K. M. Shreemathi, Dr. S. Radha, Prof & Head, Ms. S. Kirubaveni, Asst. Prof., and Dr. B. S. Sreeja, Asso. Prof., "Separation of Bio-particles in Micro Fluidic Device," International Conference on NextGen Electronic Technologies: Silicon to Software (ICNETS2) held at VIT University, Chennai.

28. Ms. V. M. Sobana, PG VLSI 2015-2017, Dr. R. Srinivasan, Prof/IT, Dr. V. Vaithianathan, Asso. Prof. and Dr. K. K. Nagarajan, Asso. Prof. "Performance Optimization of RingFET using LDD" in the Symposium C-Nanoelectronic Materials and Devices of International Conference on NextGen Electronic Technologies: Silicon to Software (ICNETS2) held at VIT University, Chennai.

29. Mr. B. Nitin Srinivas, Mr. S. Sabarish, Mr. M. Sunil Kumar, Final year ECE students (2013-2017) and Dr. S. Esther Florence, Asso. Prof., "Design and analysis of location at sea using GPS embedded life jacket" 5th International Conference on Contemporary Engineering and Technology 2017 held at Madha Engineering College, Chennai.

30. Ms. K. Indumathi, PG CS 2015-2017, Dr. R. Hemalatha, Asso. Prof., Dr. S. Aasha Nandhini, PDF, and Dr. S. Radha, Prof. & Head, "Intelligent Plant Disease Detection System using Wireless Multimedia Sensor Networks," IEEE International Conference on Wireless

Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

31. Ms. R. Subhashini, PG CS 2015-2017, Dr. N. Venkateswaran, Prof., "Semi Blind Hyperspectral Unmixing using Non negative Matrix factorization" Proceedings of Computational signal processing & analysis symposium, International Conference on Next Gen Electronic Technologies: Silicon to Software-ICNETS2, Mar. 2017. The paper received the "Best Paper Award".

32. Ms. S. Bharathi, PG CS 2015-2017 and Dr. N. Venkateswaran, Prof., "Performance analysis of Non Orthogonal Multiple Access technique with precoding," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

33. Ms. K. Vijayalakshmi, Ms. S. Aparna, Ms. Gayatri Gopal, III ECE students and Mr. W Jino Hans, Asst. Prof., "Handwritten Character Recognition Using Diagonal-Based Feature Extraction" IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

34. Ms. S. Bharathi, II PG CS student, Dr. L. Nandita, Asso. Prof., Dr. N. Venkateswaran, Prof., and Ms. R. Subhashini, II PG CS student "Performance Analysis of Non Orthogonal Multiple Access Technique with Precoding," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

35. Ms. Jansi, Research Scholar, Mr. A. Gokulakrishnan, III ECE and Dr. R. Amutha, Prof., "A Novel Framework for Action Recognition based on Histogram of Oriented Gradients and Sparsity-Inducing Shared Dictionary ," IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

36. Dr. L. Nandita, Asso. Prof., "Performance Analysis of Free-Space Optical Wireless Channels Using Finite-SNR DMT" IEEE International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET 2017) held at SSN College of Engineering from 22 – 24 Mar. 2017.

37. Ms. R. Indhu, JRF, Ms. K. M. Shreemathi, Ms. J. Anni Steffi Mercy,

Dr. S. Radha, Prof. & Head, Ms. S. Kirubaveni, Asst. Prof., and Dr. B. S. Sreeja, Asso. Prof., "Design of PDMS Membrane for CTC Separation" 6th IEEE International Conference on Information Communication and Embedded Systems (ICICES 2017) held at S. A. Engineering College, Chennai on Feb. 23rd and 24th, 2017.

38. Ms. R. D. Priyadharsini, II PG CS, Mr. S. Karthie, Asst. Prof., "Design of Sierpinski fractal microstrip bandpass filter on different substrates" International Conference on Science and Innovative Engineering (ICSIE – 2017) held at Jawahar Engineering College, Chennai, April 2, 2017.

39. K. Sameera, II PG VLSI, Dr. M. Anbuselvi, Asso. Prof. and Ms. S. Hanis, Asst. Prof., "Design of cellular automata based secure coding technique", International Conference on Innovations in Information, Embedded and Communication System, vol.3, pp.574-576, Mar. 2017.

40. B. Saranya, II PG VLSI and Dr. M. Anbuselvi, Asso. Prof., "Motion based multiple object tracking with occlusion using kalman filter", International Conference on Innovations in Information, Embedded and Communication System, vol.6, pp. 350-354, Mar. 2017.

41. Ms. S. Rajeswari, II PG AE, Dr. V. Vaithianathan, Asso. Prof., "Design of Active Inductor Based Tunable Voltage Controlled Oscillator," IEEE International Conference on Communication and Signal Processing, Adhiparasakthi Engineering College, Melmaruvathur, Apr. 6th – 8th, 2017.

42. Mr. Akhilesh Venkatasubramanian, Ms. V. Krithika, III ECE and Dr. B. Partibane, Asso. Prof., "Smart Helmet to Ensure Rider Safety," IEEE International Conference on Communication and Signal Processing, Adhiparasakthi Engineering College, Melmaruvathur, Apr. 6th – 8th, 2017.

43. Ms. V. Krithika, Mr. Akhilesh Venkatasubramanian, III ECE and Dr. B. Partibane, Asso. Prof., "Channel Estimation For a Multiuser MIMO-OFDM-IDMA System" IEEE International Conference on Communication and Signal Processing, Adhiparasakthi Engineering College, Melmaruvathur, Apr. 6th – 8th, 2017.

44. Thineshanand Jeyachandran, Vanmathi Umamageshwaran, Rajkumar Arumugam, IV ECE, and Dr. Gulam Nabi Alsath M, Asso. Prof., "An Intelligent Crasher Identification System," IEEE sponsored International Conference on Telecommunication, Power Analysis and Computing Techniques, Bharath Institute of Higher Education and Research, Apr. 6th – 8th, 2017.

45. Sindhuja K, II PG VLSI and C. Thruvenkatesan, Asso. Prof., "Design of Low Power Approximate Radix-8 Booth Multiplier", National Conference on Recent Trends in Information, Communication and Computing Technologies (RTICCT17), KSR College of Engineering, Tiruchengode, Apr. 22nd 2017.

46. R. Jansi, Research Scholar, Dr. R. Amutha, Prof., Ms. R. Alice, Ms. E. Mano Chitra and Ms. G. M. Susmitha Ros, IV ECE, "Robust object tracking using sparse based representative dictionary learning", IEEE International Conference on Computation of Power, Energy, Information and Communication (ICCPEIC) held at Aadhiparasakthi College of Engineering on 28th & 29th Mar. 2017.

47. Ms. G. Azhaguvarthani, II PG CS, Dr. B. Ramani, Asso. Prof., "Handwritten text recognition system for English" 2nd International Conference on Recent Trends in Engineering & Technology (ICRTET 2017) organized by St. Joseph's Institute of Technology, Chennai.

48. Ms. S. Swathi, Full-time research scholar and Dr. S. Sakthivel Murugan, Asso. Prof., "Performance Analysis of Magnetic Induction Technique over Electromagnetic Wave Technique for Underground Wireless Communication" International Conference on Emerging Trends in Science & Engineering (ICETSE 2017), organized by Coorg Institute of Technology, Karnataka, 11th and 12th May 2017. The paper received the Best Paper award.

49. Ms. Hasthi Gowthami, Ms. M. Brindha, Ms. Heera Parvin Azam, IV ECE, and Dr. S. Sakthivel Murugan, Asso. Prof., "Study and Analysis of Various Modulation Techniques for Underwater Communication" International Conference on Emerging Trends in Science & Engineering (ICETSE 2017), organized by Coorg Institute of Technology, Karnataka, 11th and 12th May 2017. The paper received the Best Paper award.

50. Ms. J. Shiny Christobel, II PG CS, Mr. C. Vinoth Kumar, Asst. Prof., "Feature based Breast Cancer Detection using Discrete Wavelet Transform from Mammographic Images" 2nd International Conference on Innovative & Emerging Trends in Engineering and Technology (ICIETET 2017), Panimalar Engineering College, pp. 523-529.

51. Mr. V. Lingasamy, Full-time research scholar, Dr. K. T. Selvan, Prof., S. Rengarajan,, "On the reflection phase characteristics of rectangular and circular patch reflectarray", in the proceedings of International Symposium on Antennas and Propagation (APSYM) 2016, Cochin, ISBN No:- 978-1-5090-3889-3, pp. 63-66, May 2017.

52. D. S. K. Lena, II PG CS, Vijayalakshmi P., Professor, "Speech enhancement in vehicular environments as a front end for robust speech recognizer", IEEE International Conference on Intelligent Computing and Control Systems (ICICCS 2017), Jun. 2017.

53. Ayisha shabana A. II PG CS, Lavanya T. , Research scholar, Vijayalakshmi P., Professor, "Speaker diarization for conversational speech using Bayesian information criterion", 2nd International Conference on Recent Trends in Engineering and Technology, (ICRTET), Chennai, May 2017.

54. S. V. Ramyaa, II PG VLSI Design, Mr. S. Karthie, Asst. Prof., "Design of Microstrip Bandpass Filter with different Substrates using Hilbert Fractal Geometry," ISRO Sponsored International Conference on Recent Advances in Space Technology & Communication System (ICRASTCS – 2017), Francis Xavier Engineering College, Tirunelveli, Mar. 9, 2017.

55. K.Vijayalakshmi, II PG VLSI Design, Mr. S. Karthie, Asst. Prof., "Novel Microstrip bandpass Filter with different Substrates of Koch Fractal Curve with Harmonic Suppression," ISRO Sponsored International Conference on Recent Advances in Space Technology & Communication System (ICRASTCS – 2017), Francis Xavier Engineering College, Tirunelveli, Mar. 9, 2017.

CONSULTANCY SERVICES

Dr. S. Radha, Prof. & Head, Dr. M. Gulam Nabi Alsath, Asso. Prof.,Dr.Esther Florence,Asso. Prof. & Dr. S. Ramprabhu, Asso. Prof., generated a revenue of Rs. 14375/- towards RF measurements consultancy for Research Scholars from Hindustan University and Sri Venkateswara College of Engineering, Chennai.

FACULTY UPDATES

Mr.B.Partibane, Asst. Prof., under the guidance of Dr. V. Nagarajan, Professor, Adhiparasakthi Engineering College defended his thesis titled **"Investigations on Transmitter Pre-processing and Multi-Polarized Antenna Techniques for MIMO-IDMA System"** on Jan. 18th 2017.

Abstract: The research is towards the system design to be employed at the transmitter that has lower complexity while providing higher bit error rate (BER). This is referred to as transmitter pre-processing. The research is further extended to reduce the complexity of the Multi User Transmitter Pre-processing (MUTP) for an interleave division multiple access (IDMA) system with reduced error rate when employed in realistic channel models. The research also estimates the performance enhancement in space-time transmit diversity (STTD)-IDMA system over vertical bell laboratories space time (VBLAST)-IDMA system. Furthermore, the research is extended to the implementation of dual and triple polarized antennas in MIMO-IDMA system and to compute the achievable error rate in MIMO-IDMA system in the realistic channel models.

Mr.S.Ramprabhu, Asst. Prof., under the guidance of Dr. K. Malathi, Asso. Prof., College of Engineering Guindy defended his thesis titled **"On the Design and Implementation of Frequency Selective Surfaces"** on Feb. 23rd 2017.

Abstract: Frequency Selective Surfaces (FSSs) are recurrent formation of metallic patches or apertures of simple or hybrid geometries on a substrate, providing reflection or transmission characteristics in the desired frequency range. FSSs are used in multitude of applications which includes dichroic reflectors, filters, Radar Cross Section (RCS) reduction, electromagnetic shielding, antenna gain enhancement, polarizers etc., Design of FSS for most of the applications demand three major factors viz., miniaturization, polarization independency and angular stability. Practical deployment demands the FSS array of finite size without compromising its frequency characteristics. To satisfy the above mentioned needs and to move the frequency of operation away from the occurrence of grating lobe region miniaturization of the unit cells is the most sought after solution. In addition, frequency response of the FSS for incident electromagnetic waves of different polarization and also the performance of the FSS for various incident angles determine the suitability of the FSS for particular applications.

CAMPUS STARS

Confused on what to pursue after a graduation in engineering? Thought that higher studies were the only lucrative options? While pursuing management or a technical master's in science (M.S) has its own advantages, some alumni are here to enlighten us on the prospects of employment right after the completion of engineering.

Deekshitha .V, FINAL YEAR, ECE-A
Type of placement - ON CAMPUS /NON-TECHNICAL - ZOOM Rx

1. What is the scope of employment for engineers from private engineering colleges?

The scope of employment is good for colleges like SSN where they prepare us for the evaluation rounds. In the com pany in which I joined, most of the students are from SSN, a result of the quality of training that groomed us to clinch such good offers.

2. What you can and cannot expect from placements?

You can expect –TO GET PLACED IN A COMPANY
You cannot expect – TO GET PLACED IN A COMPANY OF YOUR CHOICE WHICH DEPENDS VERY MUCH ON YOUR PREPARATION AND RELATIVE PERFORMANCE OF YOURS WITH THAT OF OTHERS.

3. How to select companies depending on your career interests and goals?

Firstly, know thoroughly about the company for which you will be applying their missions, goals and projects. Look for the company's growth in the market. Enquire about the company to your seniors. Most importantly, contemplate whether you will be the best fit for the position offered.

4. How to prepare for core and non-technical differently? Are there different strategies in prepping for the same?

Yes of course, technical companies require you to have a sound knowledge of the courses you have been learning for the past four years in your engineering course. The projects and internships undertaken would be great value-addition as chances are that the company might question you on those. Non-technical companies expect you to possess good mathematical aptitude, logical reasoning, data interpretation and verbal skills (both spoken and written communication).However, there are quite a few core companies which hire people for their non-technical posts as well.

5. If students obtain admissions for masters' courses after engineering, then is it fair on their part to reject the offers obtained through campus selection? Your thoughts on how it led to decline of placements?

Rejecting an offer definitely hampers the chance of another candidate who sits for placement. You have to be focused on what you want to do, which is very important. Only then, we can earn the trust of recruiters and maintain the consistency of placement trends without leading to a decline.

HARSHAVARDHAN RAJU, FINAL YEAR, ECE-A
Type of placement – ON CAMPUS / TECHNICAL – SOLITON TECHNOLOGY

1. What are your areas of expertise?

My areas of interest include embedded systems, robotics and machine learning.

2.Why did you opt for a technical job, given the prevailing scenario of recession in technical employment, due to automation?

I want to have experience in this field and this company particularly matches my expectation. It is related to Research & Development.

3. As a candidate who has chosen a technical company in the on-campus recruitment, what are your views on its scope in the future?

It has enough scope to help me learn more and gain experience which would either help me get a better job or help me in innovating new stuff and start my own company.

4. How was the interview procedure? What was your approach towards tackling it?

Before my interview, I researched online for previous question papers and perused them. There were totally eight rounds which consisted of the following

1) Written test- Questions on basic circuits, Physics, C++, strings, pointers and other semiconductor basics (The test was for an hour and consisted of 10 questions)

2) Group discussion- The discussion was on Chennai versus Bangalore (it was a general topic)

3) Puzzle round- We had 5 puzzles to solve

4) Technical interview- The CEO questioned me about my projects and I was required to give a synopsis about one of them it in five minutes

5) HR interview

6) Coding round- The test was for 3 hours and had five questions based on any coding language

7) Personality test- This round had essays on general social and ethical issues and also my future plans as an engineer

8) Ideation- I was asked to design a system to automate traffic lighting signal with an EM motion sensor. The ideas were expected to be presented clearly with all conditions.

5. There seems to be a gap between learning and application when it comes to our syllabus, especially given the way Anna University handles the system. Students are not motivated towards creativity as the existing condition pretty much curbs it. How did you overcome these hurdles and what would be your advise to juniors on handling this issue?

My advise is to not bother about the AU syllabus. You have to think of it as something you have to go through and while you are at it, learn as much as possible from the concepts involved by utilizing the staff and labs. You should do projects and participate in many competitions. When you find your niche, learn more through online courses like coursera, edx etc and become an expert.

6. What electives do you feel are the most relevant and useful when it comes to your field of expertise?

No electives helped me in machine learning or practical embedded systems. Soft computing is extremely useful for machine learning but unfortunately, we did not have it as an option.

CREATECH

AECE

The Valedictory function of AECE for the academic year 2016-17 was held on 04/04/2017.The office bearers of AECE, Tech Club, IEEE Comsoc were felicitated for their contribution in organizing various events such as Invente, Corona, Tech Quiz etc. On the same day Farewell to our Final year Students was organized, where both faculty members and students felicitated each other and recalled fond memories.

TECH CLUB

Tech Club has conducted sessions almost every week on a variety of topics. One introduced the second years to the various domains that ECE encompasses. Various other sessions on Advanced Robotics, Machine Learning, Arduino were conducted for the senior students.Besides, the club conducted session on on internship opportunities.Also, a talk by SSN ECE Alumnus from the batch of 2015, Vignesh Sridharan, a graduate of Georgia Tech, on doing an MS broad and the job opportunities one can expect after completing such a program was well received by the students.

CORONA

The largest event conducted this academic year was CORONA 2k16, the department's annual Intra-collegiate technical festival hosted by Tech Club. It had 6 events namely, RISC IT (a programming competition), DISPRO (the project display), NEUROQUIZ (Sci-tech quiz), SHERLOCK OHMS (Treasure hunt), LINE FOLLOWER (Robotics), SOCKET (Circuit Design). Over 465 participants participated in the events, with prizes of over Rs. 14,500 being distributed.

INVENTE

As a part of INVENTE, SSN's national level technical fest, Tech Club organised a 24 hour IOT-based hackathon as one of the star events for the fest and 10 teams were shortlisted for the final event. The event was held in the Central Library and the teams were provided with ESP8266 WiFi modules and Arduino UNO boards. The SSN Alumni, Dhinesh and Shobhan, were present for the duration of the event as mentors for the teams. The final prototypes developed by the teams were judged by a senior representative from Aricent Technologies and the mentors.

GADGET GIZMOS

> This section, we introduce you to the technical marvels of electronics and tele-communications.The first of these articles written by Adithya Madhavan,ECE-A, final year,has something to quench your gadget thirst.

ELECTRONICS FOR YOU

OK GOOGLE, can you update me about the latest advances in technology?? I'm sure Google can but I thought I could share some of my thoughts on the same. Every year, all our gadgets are starting to look very different from what they were a few years back. Our gadgets are becoming smarter day by day. I have lived on this planet for only 20 years but I have seen a drastic change in the technologies used and the way in which we use gadgets like the evolution of THE INTERNET through WEBSITES and Smart phones that have eased communication and accessibility through APPS. So, what's next?

VIRTUAL ASSISSTANT

TECHNOLOGY CHARACTREISTIC:INNOVATION

SPECIALITY: All apps on smart phones into one device.

SAMPLE PRODUCT:GOOGLE HOME, GOOGLE

DESCRIPTION:A simple speaker but with the Google assistant built in.

SERVICES:Display the things you have asked for on either your smartphone or your smart TV depending on what type of content you've asked for, differentiate voices of different members of your family and give personalized content.

Other renowned virtual assistants

Siri from Apple
Cortana from Microsoft
Alexa from Amazon

COST :130 USD

RATINGS: Walmart – 4.5/5

WHY SHOULD YOU BUY: To become lazier than ever!

VIRTUAL REALITY

TECHNOLOGY CHARACTERISTIC: INNOVATION

SPECIALITY:Technology where you see or visualize a computer generated three dimensional environments. That is, you are totally in a different environment.

SAMPLE PRODUCT: FACEBOOK-OCULUS RIFT

DECSRIPTION: a VR based headset developed by Oculus VR a division of Facebook, needs to be tethered to a PC using usb 3.0 Has touch controllers along with two external sensors to cover a larger area.

SERVICES :VR centric titles and games

COST:$600

RATING: AMAZON-4/5

INDUSTRY INSIGHT

Vodafone is a British telecommunications operator, headquartered in London that provides services ranging from mobile money transfers to the application of mobile communication technologies to healthcare, in the most practical and interactive manner to customers all over the word. As a telecom vendor and operator company, they have numerous depart- ments working dynamically to enable smooth transfer of these services. This issue, let's take a sneak peek into the departmentation and functionalities of their Chennai office comprising of vibrant employees who are headstrong in ensuring quality of service deliveries for their customers.

OUR MISSION

- 1. **FOR CUSTOMERS:**
  In anticipation of their customers' trust Vodafone understands their needs & delights themes' with its services.
- 2. **FOR OUR PEOPLE:**
  Outstanding people working together make Vodafone exceptionally successful.
- 3.**FOR RESULTS:**
  Vodafone believes in being action oriented & is driven by a desire to be the BEST.
- 4. **FOR THE WORLD AROUND US:**
  Vodafone believes helping people of the world to have fuller lives through their services & its impacts.

RADIO FREQUENCY (RF) DIVISION:

It is one of the most important departments in the Telecom Industry that looks after the instal- lation of towers and positioning of antennas for wireless connectivity (RF) between a mobile device and the tower. Radio Frequencies are in the range of 3 MHz to 6 GHz. This wide band of frequencies are sep- arated and given to various operators all around the world.

The International Telecom Union is responsible for the segregation of bandwidth for usage by various countries .In India, the Department of Telecommunications is a very active body that checks the effective utilization of the spectrum by various operators in India. There is another department called the Telecommunication Regulatory Authority of India(TRAI) that suggests the particular spectrum to be used by the operator, which wants access to use it. For example, in a spectrum auction, the TRAI gives various spectrum bandwidths available for the operators. Once an operator chooses a particular spectrum for usage, the TRAI notifies it to the DOT, which checks the effective implementation of the same by the operator which chose it for its services. However, it is the TRAI that communicates with the ITU and not the DOT. Hence it is an important link in the Indian Telecommunications sector.

FUNCTIONALITIES:

In ensuring connectivity over a larger coverage area the RF team plans and optimizes the installation of towers and antennas accordingly.

Each tower has the basic block diagram.

1.An antenna a passive device that functions as an oscillator to generate frequencies (clock) to be transmitted along with the modulated QPSK wave. It has three sectors placed 60° apart giving coverage of 180°. A 360° coverage isn't possible with antennas as RF, due to the impact of non-ionizing radiation on the human body. Hence it is considered ideal to limit the coverage of the antenna to 180°.

2.A Radio Resource Model(RRM) that modulates the wave to be transmitted using QPSK(Quadri Phase Shift Keying) , radiating it to the antenna.

3. A base band model that receives signals from the Base Control Station, the Main Switching Station and the like, and conveys the information to be transmitted in an appropriate manner to the RRM.

Besides, the RF team also supports customer complaints. For instance, when a customer launches a complaint due to lack of coverage in customer care, the call is immediately directed to the RF department of the operator, which takes appropriate measures to solve the problem. In many cases, the call gets directed to the nodal team that deals with non-coverage issues like

intermittent connectivity, or unsuccessful recharge. The nodal team in turn directs it to the Customer Service Team of the operator.

TRANSMISSION DIVISION:

The transmission team is in charge of facilitating the transport of information through a media from the transmitter to the receiver monitored by the Network Management System that controls the overall functioning of the equipments involved in the process of transmission and reception.

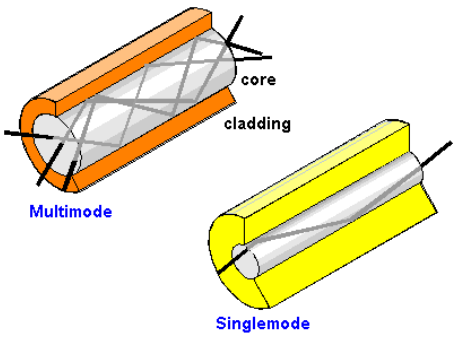
In general, there are two paths used for transmission: WIRED PATH: 1. Fiber 2.Copper

WIRELESS PATH: 1.RADIO FREQUENCY 2.MICROWAVE 3.UBR

Fiber transmission path uses two modes for transmission:

The single mode , which can be used for transporting a single signal between any two different locations.It is used mainly in long distance transmission. The multimode transmission, which can be used for transporting many signals through a single media. It is used in short distance transmission.

For e.g., the communication paths between two different devices in an Mobile Switching Station (MSS) communicate through multimode transmission.The transmission and reception of information is done by devices at either end. They vary according to the transmission paths used.



For copper: 1.ETHERNET

2. CRONE

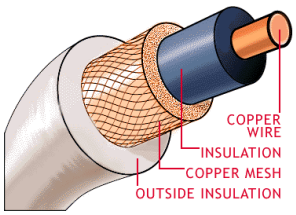
3. COAXIAL CABLE

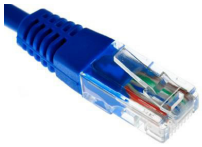
For laser :

1. SINGLE FORM-FACTOR PLU- GABLE:

SFP's are transceivers which can be used even for copper or optical fibre transmission depending upon the users requirement(for data and telecommunication applications).

If a signal has to be transmitted without dispersion and interference, it has to be checked and reshaped accordingly at regular intervals along the transmission path. For this purpose, regenerative repeaters are used that receive, reshape and resend the signal to the desired destination.





DID YOU KNOW ?

Once inducted, the employees are given technical training for two years after which they are posted to implement tasks on the job.
Address: Tower1, 9 th Floor, TVH Beliciaa Towers, Block 94, MRC Nagar, Chennai 600 028 Apply now and make your dream come true at https://www.vodafone.in/careers/apply-nowboost your career growth.

NETWORK TRANSMISSION STANDARDS:

If water from a reservoir as to reach the Chennai city, it has to be transported through a pipe of large diameter and size. If the same water after reaching Chennai has to be transported to other localities, then the diameter of the pipe slightly reduces. If it has to be transported to individual homes, the pipe's diameter becomes even smaller. Hence optimum choice on the size must be made to avoid wastage of space when delivering water to different places.

Similarly, choice of optimum bandwidth is essential when it comes to transmission depending on the destination, whether the destination is a large corporate office or to an apartment complex (users' requirement). This way, seven different types of network transmission standards to meet plenty of customer's needs:

1.E1 - 2.048Mbps
2. E3 – 45 Mbps
3. STM1-155 Mbps
4. STM4- 622 Mbps
5.STM64- 10G
6. WDM -80G
7. DWDM-100G

The maximum accessible bandwith is 10G.

NETWORK (CORE DIVISION):

The main objective of this division is to ensure smooth connectivity across the entire state of Tamilnadu, facilitating both inter-state and intra-state connections without any technical hitches. The standard modes of communication used like GSM (global Stand- ard for Mobile

Communications) and CDMA (Code Division Multiple Access) are still in access while the superfast 4G through the 2100 MHz (used for radio transmissions) are in greater demand as well. LAUNCH OF VODAFONE 4G(LTE) Long Term Evolution (LTE) is a 4G wireless broadband technology developed by the Third Generation Partnership Project (3GPP).LTE provides increased peak data rates, with the potential for 100 Mbps downstream and 30 Mbps upstream. It is called as an evolution since it was the first of its kind to be developed to enhance 4G transmission. 4G operates only on data transmission and doesn't support voice and video calls unlike 2g or 3g. Vodafone has effectively launched the 4g supernet through attractive plans like Vodafone Red for the benefit of the customers.

Value-added services of VODAFONE:

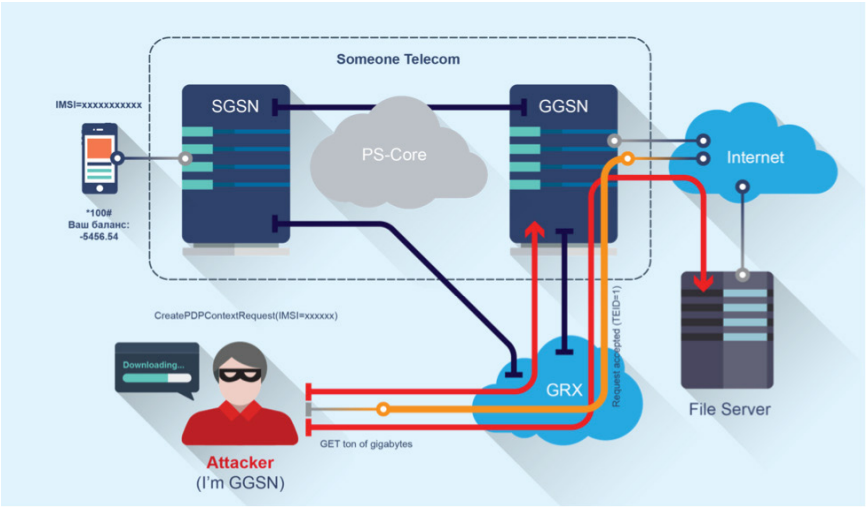
Vodafone offers many value added services in both 2g and 3g spectrums, some of which include:

Ring Back Tone

Missed call Alert

Voice mail

MOBILE SITE



The mobile site at Ekkatuthangal, Chennai comprises of equipments which work in conjunction with various others in all parts of India and the world. Some of the most significant ones are:

1. MSC (Mobile Switching Centre) is the controlling center for all the transmission and reception at the site.

2. Gateway service Support Node (GGSN) that supports the transfer of data in the GPRS networks and for connectivity to an external network (packet- switched).
3. Intelligent network (IN) that is a bank to calculate the net balance available in a pre-paid call whenever the call is made. It stores the additional customer's details (if the customer is a pre-paid one) for curtailing the accessibility to the network whenever a customer has a nil balance.
4. RECC (Reverse Control Channel) that is responsible for holding data packs of customers. Often, when the data pack is over, it checks the IN for available core balance to allow data transfers in a GPRS network.

DID YOU KNOW ?

For girls, working with transmission and RF planning teams are preferred over on-site jobs.

Automation has led to decrease in manpower. Nevertheless, the availability of skilled manpower provides scope for employment.

Qualifications like the CCNA (Cisco certified Network Associate) and CCNP(Cisco certified Network Professional) are a great value addition to CAREER AT VODAFONE

POTENTIALS UNLEASHED

"When it comes to performance, it's little wonder that ECE's motley crowds of enthusiastic engineers are proving their mettle in every field possible. From technical research discussions to music to coding to clinching hefty packages, they have definitely contributed to SSNCE's pride and reputation. Draw your inspiration from these with ACTIVITIES MULTIFOLD and TALENTS PLENTIFOLD. And to these young grads, "CON 'GRAD' ULATIONS"!!!!"

CO-CURRICULAR ACHIEVEMENTS

1. Mr. V. Lingasamy, Full-time research scholar and Ms. M. Akila visited ISRO Satellite Center, Bangalore for research related discussions on 20th Apr. 2017.

2. Mr. V. Lingasamy, Full-time research scholar, visited IIT Roorkee for ISRO Project related discussions.

3. Ms. Sowmya Bhatraju, Ms. A. Rekha, Ms. S. Srivaishnavi, III ECE, Dr. N. Venkateswaran, Prof., Mr. W. Jino Hans, Asst. Prof., Ms. K. Madheswari, Asst. Prof./CSE, "A Joint Super-Resolution and Fusion framework for Multi-spectral and Panchromatic Cartosat Images," National Symposium on "Recent Advances in Remote Sensing and GIS with Special Emphasis on Mountain Ecosystems" from 7th – 9th Dec. 2016.

4. Mr. V. Lingasamy, Full-time research scholar attended three days "International Symposium on Antennas and Propagation (APSYM) 2016" held at CUSAT, Cochin and presented a paper titled "On the reflection phase characteristics of rectangular and circular patch reflectarray elements"from 15th – 17th Dec. 2016.

5. Ms. JPP Jemimah, Full-time research scholar & Dr. R. Amutha, Prof., attended 3 day workshop on "Cooperative 4G/5G MIMO wireless technology" at M. S. Ramaiah Institute of Technology organized by IIT Kanpur from 28th to 30th Dec. 2016.

6. Ms. V. Angayarkanni, JRF.,, Ms. P. Nirmala, JRF – IOT workshop from 4th – 6th Jan. 2017.

7. Ms. R. Chithradevi, Research scholar, attended the training programme on "State-of-the-Art of Analytical Equipments" at Anna University, Chennai from 9th – 10th Feb. 2017.

8. Ms. R. Chithradevi, Full-time research scholar, attended a seminar on "Antennas for Advanced Communication Applications" held at IIITDM, Kancheepuram on 27th Mar. 2017.

9. Ms. R. Indhu, JRF, attended a workshop on "Modeling and Simulation of Nano materials using VASP, Synthesis and Characterization of Nano materials" at Hindustan College of Engineering, Chennai on Feb. 20 & 21, 2017.

10. Mr. C. Vinoth Kumar, Asst. Prof., & Dr. S. Joseph Gladwin, Asso. Prof., as mentors accompanied the III year students Ms. S. Aparna, Mr. K. Karthik, Ms. Manasa Bharathi, Ms. M. Meena, Ms. S. R. Janani, Mr. A. Gokulakrishnan for Smart India Hackathon 2017 held at Gurunanak Institute of Technology, Kolkata from 1st to 2nd Apr. 2017.

11. Mr. V. Lingasamy, Full-time research scholar, received "Special Contribution Award" in Research Day held on 23rd March 2017, at SSN College of Engineering, Chennai.

12. Karthigeyan K.A and Maran Ponnambalam, Full-time Research Scholar of Dr. Premanand V. Chandramani, attended a GIAN course, "Integrated Phase and Frequency Synthesis" at IIT Madras between Mar. 1st and Mar. 13th, 2017. The course was coordinated by Dr.Shanthi Pavan, Prof., Dept. of Electrical Engineering, IITM and course instructor was Dr. Sudhakar Pamarti, Asso. Prof., Dept. of Electrical Engineering, UCLA.

13. Ms. G. Padmalaya, Research Scholar attended INUP Familiarization workshop on Nanofabrication Technologies and NCPRE Familiarization workshop on Photovoltaics at IIT Bombay, Powai from 22nd to 24th May 2017.

14.Several students of III ECE attended the ARM workshop, IEEE project expo, Pragyan IIT-MUN, Teach a School.

15 .K.Vijayalakshmi III ECE was awarded Internal funding for project on 'Design and Construction of Automatic Fenders/Cowcatchers for trucks'along with Arul Noble Jose Rohan (Mechanical III year), Hariharasudhan R (Mechanical III year), Durga M (Mechanical III year).She also presented a paper on 'Hand-written Character Recognition Using Diagonal-based Feature Extraction', in 'WiSPNET 2017'co-authored with Aparna S, Gayatri Gopal.Besides, she was also a finalist of 'Dr. APJ Abdul Kalam Innovation Ecosystem Awards 2017' conducted at Sairam Institutions , for the project idea submitted on 'VR infused driving in poor visibility condition' along with Mohamed Nafees A (III year Mechanical), Lordson Jacob (III year IT).

EXTRA CURRICULAR ACTIVITIES

SPORTS

1. N.Hemapriya (IV ECE) has represented the Anna University chess team in the World inter University Chess tournament held at Kolalumpur and the team secured the silver medal during 19th Jan. to 24th

2. P.Divya (III ECE) have represented the Anna university Table Tennis team in the South zone inter University Table Tennis tournament organized by Anna University and the team secured the Silver Medal during 30th Dec. 2016 and 1st Jan. 2017.She was also placed fourth in the All India Open University Table Tennis tourna ment held at Solan, Him achal Pradesh.

3. E. Vignesh (IV ECE) participated in the Tamil Nadu Cricket Association (TNCA) first division cricket tournament during 17th Jan. 2017 to 25th Jan. 2017.

OTHERS

ANNAPOORANI BARANI's article titled "SEASON OF GIVING", was published in INFINITHOUGHTS- an international holistic growth oriented magazine in MAY 2017 issue.She also won the second place in the regional finals in ICTACT YOUTH TALKATHON held at Chennai Institute of Technology on August 20th, 2017.

SHRINIDHI .V , ECE-B, third year, won a singing contest by Mantri Synergy.

MANASA BHARATHI, THIRD YEAR, ECE-A was awarded the Ms.valen"tune" title and won the first prize in a singing competition held on 18th Feb 2017 at grand mall, velachery.

KISHORE of second year, ECE has acted in 5 plays, and written six stories published in various magazines namely 'BOODH RANI' for a monthly magazine called 'KAITHADI'.

INITIATIVES

NSS & YRC ACTIVITIES

1. Dr. S. Joseph Gladwin, Asso. Prof., and Dr. T. Sree Sharmila, Asso. Prof/IT organized a three day YRC Village camp at Siruthavur Govt. Middle School, Kancheepuram District from 26th - 28th Jan. 2017

2. Ms. P. Kaythry Asst. Prof. and Mr. W. Jino Hans, Asst. Prof. organized seven days NSS annual special camp at Kayar village from 26th Jan 2017 to 2nd Feb. 2017.

3.Ms. P. Kaythry, Asst. Prof., attended Anna University NSS Review meeting at Anna University on 25th Mar. 2017

PLACEMENT REPORT

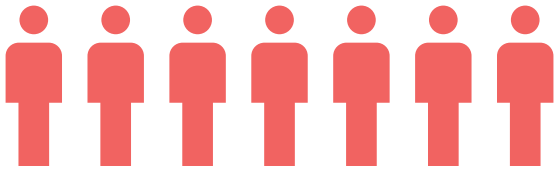
Highest Salary :
6.5LPA in ZOHO Corporation

SABARISH.S.
MANASA.S

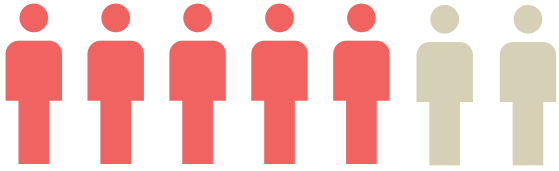
Average Salary:5.463LPA

54 No. of companies visited

201 No. of offers received

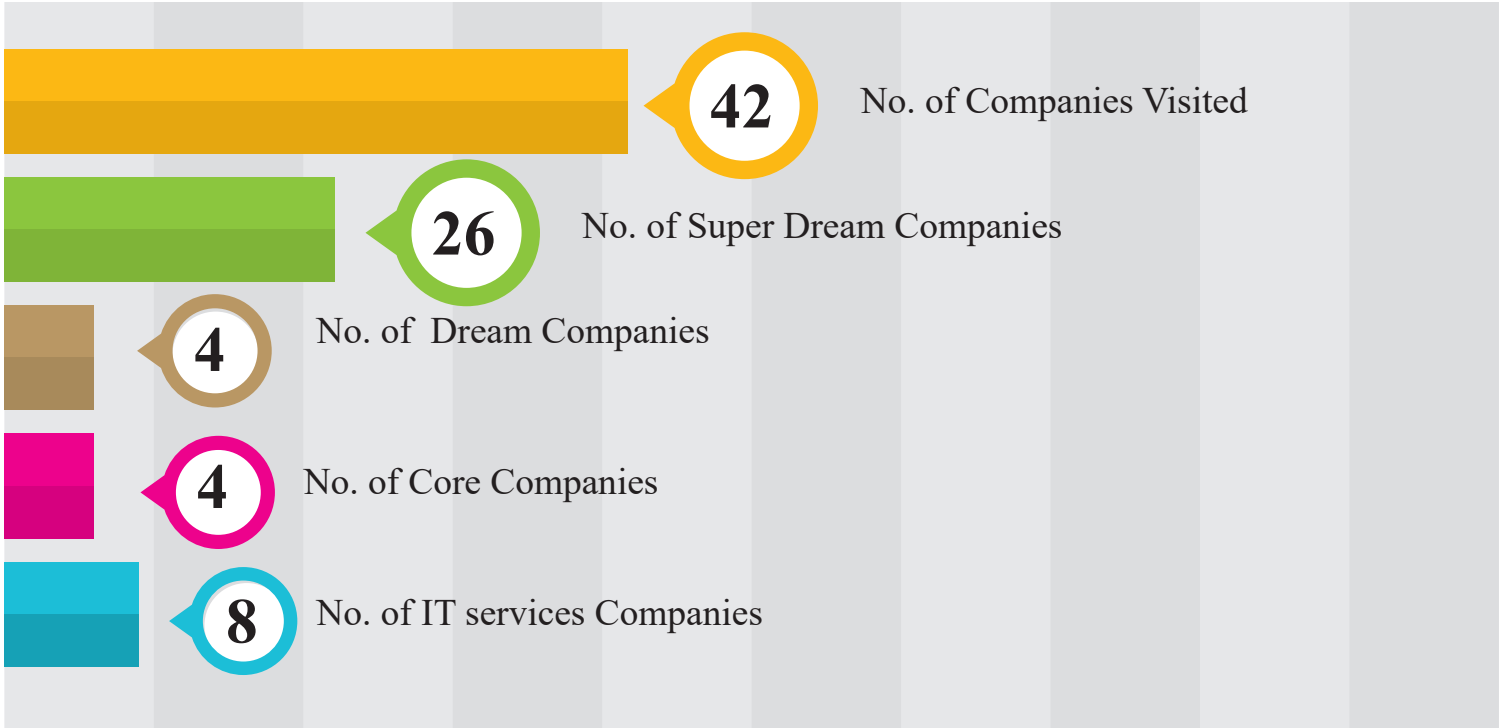


140 No. of students registered



102 No. of eligible students

102 No. of students placed



ENGINEERING DECODED-ELECTIVE EDUCATION

Engineering as a course not only equips you with knowledge, but also allows you to experiment with a range of student-friendly and informative courses. As you move up the ladder, passing (a rather ordinary word! Or, should I say, successfully completing) semester after semester, you would find yourself at cross-roads at the time of choosing your subjects. In higher semesters, when you would be expected to make your own choice of subjects through the option of electives, there may occur a dilemma before you make the final decision. This article would help you in making a conscious and cautious choice in such situations.

What is an elective?

An elective is a course that is designed as part of the curriculum that you get to choose. They may be an extension of your core subjects or an altogether different course which might be way dissimilar to engineering.

In our college, there are six electives provided, one in the sixth semester ,three in the seventh semester and two in the eighth semester.

Why choose an elective?

An elective is chosen to nurture the student's interest in a particular field and help the student sustain and hone that interest over a period of time.

Why the dilemma in making a choice?

Often, students are interested in a particular field of specialization, say, signal processing or embedded systems or any of the other fields. But when presented with a range of subjects to choose from for pursuing as an elective course that complies with their field of interest, they are often confronted with a dilemma on the choice of subjects to make to enhance their interest in that specialized field. One of the main reasons cited is the lack of knowledge of the elective subjects that come under a particular, known field of specialization.

The solution

To bridge this wide gap in knowledge, there is a table provided below that shows you the elective course and the corresponding field of specialization it belongs to. Study the tablethoroughly and make a careful choice henceforth.

All the very best!!!

(Compiled with inputs from HARSHAVARDHAN RAJU, Batch 2013-17)

01 WIRELESS COMMUNICATION

SEM	COURSE TITLE
VI	Cognitive Radio
VII	Radar and Navigational Aids
VII	Satellite Communication
VIII	Multimedia Compression and Communication

02 MACHINE LEARNING

SEM	COURSE TITLE
VI	Advanced Digital Signal Processing
VII	Soft Computing

03 ANTENNAS

SEM	COURSE TITLE
VI	Cognitive Radio
VII	Radar and Navigational Aids
VIII	RF Sysytem Design

04 COMPUTER SCIENCE

SEM	COURSE TITLE
VI	Operating Systems
VII	Advanced Computer Architecture
VIII	Web Technology

05 RADIO FREQUENCY

SEM	COURSE TITLE
VII	Electro Magnetic Interference and Compatibility
VIII	RF System Design

06 SIGNAL AND SPEECH PROCESSING

SEM	COURSE TITLE
VI	Advanced Digital Signal Processing
VII	Digital Image Processing
VII	Speech Processing

07 NETWORKS AND CRYPTOGRAPHY

SEM	COURSE TITLE
VIII	Cryptography and Network Security
VIII	Ad hoc and Sensors

(Compiled with inputs from HARSHAVARDHAN RAJU, Batch 2013-17)

08 ANALOG CIRCUITS & ELECTRONIC DEVICES

SEM	COURSE TITLE
VII	CMOS Analog IC Design
VI	Medical Electronics
VII	Electronic testing
VII	Electronics Packaging
VIII	Data converters
VII	Opto Electronic Devices

09 IMAGE PROCESSING

SEM	COURSE TITLE
VII	Digital Image Processing

10 EMBEDDED SYSTEMS

SEM	COURSE TITLE
VI	Medical Electronics
VII	Advanced Microprocessors and Embedded Microcontrollers

11 MANAGEMENT

SEM	COURSE TITLE
VIII	Total Quality Management
VIII	Entrepreneurship Development
VIII	Software Project Development

12 ROBOTICS

SEM	COURSE TITLE
VI	Robotics and Automation

13 AVIONICS

SEM	COURSE TITLE
VII	Avionics

14 OTHERS

SEM	COURSE TITLE
VIII	Indian Constitution and Society
VIII	Professional Ethics in Engineering

COUNSEL FOR YOUR CONFUSION

Worried ? Anxious? Unable to interact? Facing tough times in college? This edition, we bring to you solutions to the myriad issues students face in four years of college life, from mental blocks to peer interactions. For this very purpose, Dr.S.NANDA, counselor cum psychologist at SSN college of Engineering, shares her valuable inputs that serve as a panacea for all your grievances.

1. I feel demotivated and sulk in frustration and search for excuses for my mediocre performance. How do I motivate myself, in the first place to take initiatives for excelling in academics and co-curricular?

Dear student,

Various factors play an important role in individual's motivation Intrinsic factors like your interest in the course, your need for achievement and excellence and your perception about the value of the course you have undertaken and finally your priorities in life. On the other hand, extrinsic factors like poor quality of teaching,peers not being supportive,unacceptable structure and allocation of rewards may also lead to demotivation.Try to identify your factors and if they fall into the intrinsic category, your sincere efforts to improve will work. If your factors fall in the extrinsic category, then reach out to your counselor for further help.

2. These days, for fear of plagiarism of ideas, my peers seldom share valuable technical information with me. Some of them get-together and disseminate ideas only among themselves. How can I, as a student, improvise the situation to avoid this discrepancy with my peers?

Dear student,

Accept the reality of plagiarism threat.It can happen to anyone.Unethical practices by a few leads to lack of trust among peers in sharing ideas. Try to work on these areas of being ethical and trustworthy to help your-

self and others.
TIP:Enagage and promote trust- building exercises among peers.

3. When I reach my final year, I am confused about my choice of career path. This had led to a fear in me of being unemployed after completion of my engineering. I wallow in self-doubt on whether I will survive the intense competition that prevails in the industry and I am scared of what my future has in store for me. How do I go about tackling this fear?

Dear student,
I understand by what you have written that you are already in your fourth year and have not planned for your career.By now, you would have figured out your strengths and weaknesses.Plan for a career based on your strengths.Just don't keep attending interviews withour knowing where you want to go and what you want to do.If you are unable to find solutions yourself,please visit your counselor and take psychometric profiling done to help you with career choice based on your personality and skills.Finally remember, if one does not know to which port one is sailing, no wind is favourable.

4.The formation of peer groups in my class isolates me. I am scared of mingling with my peers for fear of being rejected in their gang. When people should be accepted as they are, I don't understand why such groups still exist. I feel lonely during those times. What should I do?

Dear student,
Is this the first instance you are facing isolation or have you ever experienced similar fear of rejection?If this is your first experience, try and talk to the peers in the group.The fear may be just your misunderstanding/miscommunication with them.But , if you constantly face such fears facing new groups / persons,you have to consult your counselor for help

Dr.S.Nanda is a counseling psychologist with 15+ years of experience.She has a Ph.d in Applied Psychology with interests in adolescent behavior,positive psychology,emotional intelligence and organizational behavior.For any personal queries and guidance, please contact the SSN Counselling center in Career Development Cell block.

HIGH - FLYING HEXADETECTIVES!

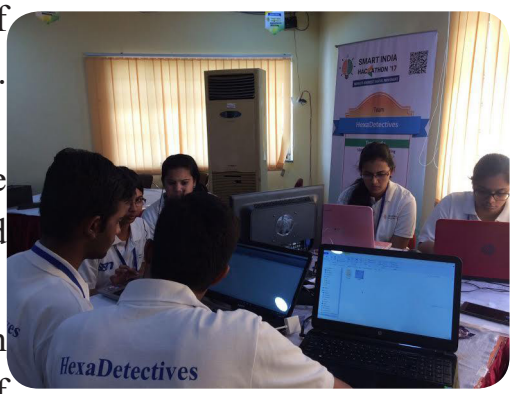
"From being addressed by the Honourable Prime Minister of India to feverishly coding for two sleepless nights amidst the hustle-bustle of Calcutta's chaotic streets, these six coders from the third year gave their all to put their alma mater on an altogether different pedestal, by competing in what was known as India's biggest technologically innovating, mentally stimulating event – THE SMART INDIA HACKATHON. Let's hear from the team of six ,who share their wonderful experience, in their own words, from start to finish of a once-in-a-lifetime mega event of their lives."

The Smart India Hackathon (SIH) 2017 was a mega event organized by the government of India as a part of its **'Digital India'** campaign. It was aimed at providing digital solutions to hundreds of problem statements collected from various ministries and departments. It witnessed the participation of over 10,000 students representing various educational institutions from across the country. It was a great privilege for our team to get selected and represent our college in the grand finale which was held on **April 1st - 2nd**. The grand finale was held at 33 nodal centres across the country and it was a **36-hour non-stop coding contest**.

Cancer is one of the most prevalent diseases and it takes millions of lives a year. Providing a tool to the medical community to identify abnormal cells images and videos of histopathological slides would aid in its detection at an early stage. Thus, we presented our solution to the problem statement **"Identifying Cell Boundaries from Video Data"** which was provided by the **Indian Council of Medical Research (ICMR).** The aim was to identify and isolate individual biological cells from a low-quality video of a histopathological slide and provide software solutions to classify and detect any possible cancerous specimens and cell

abnormalities. We had **Dr. Joseph S. Gladwin** and **Mr. C. Vinoth Kumar** as our mentors, and **Ms. K. Leksmi** from the computer science department provided us with supplementary approaches to the solution and additional support prior to the competition. The nodal centre assigned to us was **Guru Nanak Institute of Technology (GNIT), Kolkata** and our college and mentors were very helpful in arranging and organising our journey which proved to be a great learning experience for us.

The proposed solution was based on image processing and segmentation techniques using MATLAB software and the supporting toolboxes. We had to prepare ourselves ahead of the grand finale by honing our programming skills and learning about some basic image processing techniques. Our mentors were extremely supportive and encouraging in helping us to learn and prepare ourselves for the contest. The morning of April 1, 2017 will always remain afresh in our memories as the honourable Human Resource Development minister **Shri. Prakash Javadekar** flagged off the biggest event of our lives, the SIH 2017. After that, it was one of the most challenging, fun and exhausting 36-hour coding journey.



We started with our work briskly and had to face several challenges in our attempt to provide a suitable solution for the chosen problem statement. The main issue which we confronted in the beginning was because of the quality of the video samples considered. Since the objective was to detect cells from low quality video data, the samples considered had too much of histological noise in the form of stain marks and aberrations. Moreover, the contrast difference was too low and this made the cells and the surrounding background appear almost indistinguishable. The first step was to convert the video data into viable frames of images before further processing in order to reduce the processing time by a great extent. We used **Structural Similarity (SSIM)** index for comparing and discarding unviable frames from the input video samples. After perfecting this step, only the selected frames were considered for further processing. Several image pre-processing techniques such as image resizing, contrast limited adaptive histogram equalisation (CLAHE), erosion and dilation were used in order to improve the contrast of the images and to resize the images to fit our specified dimensions. **'Frame Selection'** was our first successful milestone and the first round of evaluation and mentoring by judges went smoothly. The honourable Prime Minister Shri. Narendra Modi addressed us on the night of 1st April through video conferencing and his words of encouragement was a major boost for us to work hard and stay motivated.

The next task was to detect the cells present in each frame. We used a combination of several techniques present in MATLAB to accomplish this such as Canny edge detection, creation of a nuclei mask, creation of a cytoplasm mask and then the generation of a separate mask for each of the

nuclei present in a given frame. The presence of overlapping cells and blotches of stain which were of the same size as the nuclei complicated this task and thus required a number of trails and careful adjustment of parameters before it was resolved successfully. The final task was to analyse the morphological features of the detected cells and to classify them as normal or abnormal cells. The presence of multiple nuclei, enlarged nucleus, irregular cell and nuclei shape are all indicative of cancerous cells and/or other abnormalities. We considered the area and perimeter of the nucleus, average area of the cytoplasm, and the cell-to-nucleus ratio as the morphological parameters for the binary classification of cells. The cells with distinct deviations in their morphological features from the statistical mean values were classified as potential cancer cells and were marked suitably on the original images.

In total, after 3 rounds of evaluation we finally presented our entire solution, the MATLAB program to detect abnormal cells and were commended for taking up such a challenging task and completing it successfully. The complete solution was submitted to ICMR. This software product developed by us can serve as a tool in aiding doctors and professional in detection of cancer cells of any kind. The tool can be modified to suit different application and hence is a highly flexible system. The sample videos and the diagnosis reports can also be transmitted wirelessly from remote locations thus eliminating the need for the patient and the doctor to be available at the same location. Furthermore, the solution can be made completely automated by incorporating a database with morphological features of different variety of cells and using it as the metric for classification. Thus, we identified multiple feasible ways of arriving at a solution to the same problem. On the whole, it was an interesting and exciting experience for us to prove our mettle in an industry-oriented platform which is still yearning for major technical breakthroughs.

By

APARNA .S
MANASA BHARATHI .N
KARTHIK .K
MEENA .M
GOKULAKRISHNAN .A
JANANI .S.R

WASSUP

WASSUP? You have come this far! By now, you must be acquainted with every nugget of information an electronics engineer should know and I hope we have been able to provide it as discreetly and precisely as we can.Beyond this, shouldn't you explore opportunities that tap your talents ?This section exactly guides you on that. Here , are provided a list of workshops and contests that you can attend in technical / non-technical domain.

TECHNICAL

1.10th International Conference on Precision, Micro, Meso and Nano Engineering COPEN 10, 2017, at IIT-M, from 07-09 Dec 2017

2.Product Design workshop using Fusion360, at IIT-M Research Park, on 2 July 2017, 10.30 am

3. IoT geeks- Jul '17, at ThoughtWorks, Chennai on 9 Jul 2017

4. Applications to the 'Summer Research Fellowship Programme 2018', offered by the Indian Academy of Sciences, will open around October 2017.

5.One day training Program on hyper spectral data processing techniques, at VIT Vellore, on 3/10/17.

6.International conference on Computational Intelligence and Informatics-2017 (IccII- 2017), at JNTU Hyderabad, on 27-29 September

7. International conference on Intelligent Information Technologies (ICIIT 2017), at AU, sept 6-8,2017

8. Embedded System Architecture and ARM Processor (ESAAP'17), at VIT Vellore, on 10/7/17

9. Kaizen Robotics Program - Lema Labs (Incubated at IIT Madras Incubation Cell), 23 Jul ,2017 9 am

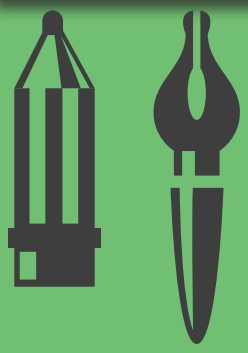
OTHERS:

1.ICTACT YOUTH TALKATHON is inviting applications with registrations at https://goo.gl/Q9GJyr

2.SSN MUSIC CLUB organizes master class sessions conducted by professional musicians.For more details, visit http://www.facebook.com.ssnmusicclub

ALL THE BEST!!!

WRITER'S ENCLAVE



"Writing is a unique ability to express, a gift that only a few possess to influence and inspire many. You write to vent out the pent up frustrations and feelings of your mind and to voice your opinion on matters of concern. Some write simply because they are triggered by a figment of imagination and some write out of gratitude. Welcome to the Writer's Enclave, where you find a creative blend of different emotions engulfing you for an amusing and enjoyable read!"

MELANCHOLY

Here is an ode to a Martian rover
about to be hit by an asteroid ·

The 3650th sun sets, snatching away the day,
My source of life too, withers away,
The night sky however, seems restless today,
As a hurtling ball of fire, makes my mind sway·

As I stretch my hands, last goodbye I bade,
To the blue planet which sent me away,
A gulp arises, almost throttling me,
In apprehension of death never seen,
Memories over flood my heart,
As it ticks away,overwrought·

My life began as a mere chip,
Distorted now, like the incoming blip,
A perfect sendoff, to search in emptiness,
Overcome these days by beckoning loneliness·
Crafted delectably by man's creative mind,
More precious to him than 1000 gold mines·

MELANCHOLY

For I was the only rover they had,

To explore a terrain that man never had,
Tongue -tied with solitude, I still moved on,
Making my way into a dusty dawn,
Perilous uncertainty, unfamiliarity, insecurity,
Gave in to my desire to serve society.

Caught unawares in a race too tight,
Kept in the dark about a bitter foresight,
I was their mission, their promise to some,
My sacrifice would enlighten generations to come.

Thunderous applause, fiery chats, a perfect bow,
My life's tale would end with a vow,
To make more such successful missions,
Unearthing science reports, wrecking fiction,
Man moves on, planning doom for more,
False expectations which made me soar.

Is he the same man? Who nurtured me like his child?
Leaving me to rot in this world, too wild?
That day as he caressed my precious soul,
Exalted, as I took off from his floor,

I knew I was in the best hands,
With his support, all dangers I would withstand,
Destined was I, to live up to his dreams,
Bridging a gap wider than it seemed.

MELANCHOLY

One day, rubble I became in this world,
The climb was too high, the journey too cold,
The circuits failed, led to an energy drain,
In desperation, I hung on to backup in vain,
Snapping my connections, the screen went out,
But I still counted on hope throughout.

The dark days never seem to end,
Hoping that they send a craft, making amends,
Yearning for company that they could least send,
The wait today, reaching a devastating end.

The hurtling ball of fire, a minute away,
Despaired, despondent, dejected I stay,
A thunderous explosion, blinding light,
Shrouds the soul of the eternal knight.

-Elakhya N ECE A 3rd year

the grandest mother

A young girl expresses her awe and gratitude for her granny's admirable qualities and service.

"How was the exam, kanna?" asked my Ammama anxiously looking on to my crest-fallen face. " I don't know why this always happens to me alone, when the whole class got easy experiments, I end up with brain toiling one, though I did manage to do it". I explained blaming my destiny for every thing. She soothed me by saying " Don't worry, GOD is always with you and I pray for you all the time. So my Ammama, (as I fondly call her which in due course became Amma) has been a sheer pillar of support. This daily dose of tonic has kept me going.

In case of any argument between me and my mom, this lovable lady readily bats for me. People love various cuisines of the world but I opt for homemade south Indian food just because of the range of delicacies she offers at home. She has mastered nearly all the dishes ranging from the traditional " Avial" to the trend setting "Bread Uthappam". Above all her notion to serve food magnanimously to everyone has made her stand apart.

During my study holidays or exam days she ensures that I never felt hungry. The other unique quality that I admire is her presence of mind.I have witnessed this during cooking when she is in short of an ingredients. She produces the same or nearly the same dish with quick alternatives. If a crisis arises, she hardly thinks for a while and swiftly comes up with a 'Bang on' solution.

My grandmom has the most cre-

ative fingers , she knows to convert the junk to judicious goods. She tries her hand at tiny crafts and embroidery. She was a proud producer of hand bags, clutches made by wool knitting & crotchet weaving.

Another dimension which I would admire is during the Margazhi season, threshold of our home is beautified with the splendid rangoli designs on the floor. With the mention of Marghazhi she enjoys listening to music especially when I am the vocalist.

Though she is an orthodox woman , she adapts herself very well to the modern life style. She never deters from any rituals or functions and no celebration is complete without her home made savories.

Since my mom is employed, my granny has been my baby sitter since childhood. Ofcourse, she still considers me as a baby. Both of us love each other 's company. I share everything under the world with her and so does she. She narrates her experience and stories which really belittles me. She is a woman of hardwork, perseverance and self confidence. I am so glad that I have imbibed few qualities of her and still in the process of acquiring more. There cannot be a single person who has left my house with a heavy heart. She is the god of best hospitality.

Two decades ago,on a pleasant evening the nurse handed over a newborn baby to her and from that very moment she has never let me off her hands or heart.

There is no price for her unconditional love bestowed on me and to sum up ,this pretty female is a symbol of love , compassion and reflection of motherhood.

-Manasa Bharathi,
ECE-A, 3rd year

PASSION Vs PROFESSION

A young girl confesses what stops people from pursuing their passions as careers and offers an effective solution to deal with the dilemma many face when pursuing passion as a profession.

When was the last time you went for a leisure stroll in your neighborhood, without having a phone in your hands? When was the last time you saw and observed the flowers of the season in full bloom? The technology, which was supposed to make us smarter, has hindered us from enjoying what we truly love the most. We are so much a part of the rat race that everything which once mattered to us, which exhibited our deepest passions, which boosted our craziest thoughts and imaginations, when we were kids, be it painting, music, art, or dance has taken a back seat. We still find people who pursue them, but deep inside, we are scared to take the plunge. We are pulverized by the "what-if's" that bombard us when we tend to make an out-of-the-box decision. Instead of going about saying we are "busy" or we "don't have time for any activity ", let's try rephrasing it with a "it's not a priority ". Infact, the ugly truth lies in the latter phrase. The academically centered education system of ours leads us into believing that pursuing an offbeat course requires great courage not only to deal with financial uncertainties, but also the criticisms of all and sundry. If at all you wish to disentangle yourselves from this, let me tell you something - Pursue whatever we are passionate about for atleast 5 minutes daily. Trust me, it will make you feel better. You won't be disappointed. When you do what your heart loves and your mind finds peace in, you find happiness. And when you find happiness, you radiate it to the people around you. And at the end of the day, isn't that all which matters? That's what life is all about. We have all the power and all the ability to make our dreams come true. The only thing which stops us is our own mind giving space for others' opinions to define and rule us. Learn to conquer it and everything is possible!

-Amirthavarshini Sundarar,
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