



# Academic Reflections

By Professor Krishnasamy T. Selvan

In this article, the writer intends to share some of his varied reflections concerning academic pursuit. These thoughts are not institution-specific, but are meant to be of a general reflective nature.

Historically, academic focus in good institutions, particularly in respect of undergraduate education, has been the provision of solid foundation in science and engineering disciplines. This is just as it should be, as knowledge in general is at the core of all our activities. The rapid industrialization in the last couple of decades or so, however, has made us aware that additional skills are often required in addition to knowledge for employability. Since the type of the specific skills needed could change from industry to industry, and also from time-to-time,

modern academe is tasked with the challenge of providing a generic set of skills to students that will help them adapt to varying requirements.



That this realization is actually not new to education becomes evident when we pause to consider the commonly understood meaning, at least in India, of education. Traditionally, the thought of an educated person raises in us the expectation that he/she is knowledgeable, scholarly, genteel and responsible. Thus commonsense tells us that these are all qualities that good education must imbibe in us. Modern expectations are just an echo of the desirability of similar qualities. For example, the attributes of a modern engineer that companies expect, according to a survey by Arora and Faraone [IEEE Antennas and Propagation Magazine, October 2003] include: 'integrity and honesty, knowing how to learn, creative thinking' and the ability to appreciate diversity. We may note that the phrase 'knowing how to learn' means the same thing as life-long learning ability.

Thus while technical skills built around knowledge are necessary for employability, they are often not sufficient by themselves: our graduates also need professional values. These values are best integrated into our academic delivery (and also systems) rather than delivered as a separate course. For, a separate course could lead students to believe that values are entity separate from profession.

## Highlights

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The values such as life-long learning skill, creativity and the ability to celebrate (not just tolerate!) diversity are also related to the qualities of scholarship and scientific spirit.

What is scientific spirit? Is it to blindly believe that everything claimed to be scientific is all truth? We may agree that it is not. Science being a historical process, it is rather difficult to define precisely what is 'scientific.' Paul Feyerabend's works that provide excellent discourse on the topic may be consulted to get a glimpse into the nature of this process. A short article of this writer in the July 2004 issue of the journal Science and Engineering Ethics may provide a quick introduction on the topic for those hard-pressed for time.

Creativity and conformity or rigidity rarely go together. So we must encourage our students to think for themselves, to ask questions. While the university pattern of education and assessment could pose a challenge in this regard particularly for affiliated colleges, whatever is possible within existing bounds must be tried.

The teacher thus not being a mere knowledge-transmitter, quality rather than quantity of contact hours is of prime importance in the teaching-learning process. Delivering an education that not only gives knowledge but also qualities such as the ones mentioned above, needless to say, requires teachers that are inspired – it is an inspired academic that can possibly inspire students. To this end, while self-motivation is desirable, since it cannot be taken for granted, the provision of a supportive academic ambience should (or continue to) be on our agenda.

Many (including those in the West) would agree that India is a country that is intellectually resourceful. But still it so happens that we have not produced good number of institutions of repute, commensurate with our country's size and population. There is probably a complex set of reasons, including aspects such as our history, culture, etc., that could account for this. One of the reasons could also possibly be that we attach more than necessary importance to process and hierarchy, both of which facilitate conformity rather than creativity. Excessive process-focus shifts

responsibility away from the individual, while hierarchy, when enforced, ensures conformity and uniformity but not identification with institutional goals. This could be one of the reasons we have so many quality-certified institutions but so few quality institutions. Therefore, it appears to this writer that institutions that are on intellectual pursuit need diversity rather than conformity, individual- rather than process focus. Because it is from individuals that excellence flows. So it is probably that we should facilitate an environment that is characterized by trust and freedom (which always comes with responsibility). In such an environment, better creativity and a higher level of identification with larger goals is possible.

Much has been said about the need for ethical awareness in engineers. After all, engineering, like any other profession, is an intensely human endeavour and therefore its undertaking affects us all in one way or the other. It is not without good reason that the IEEE has as its motto the advancement of 'technology for humanity.' It is therefore that scientists and engineers should bother about the possible societal consequences of their pursuit, despite authors such as James A. Stieb criticizing 'authors such as Krishnasamy Selvan' for suggesting that bettering humanity ought to be an objective of engineering and science.

No discussion about academic pursuit could be complete without considering the role in it of students, as the future of academe (in particular, and the world, in general) depends on them. Students are collaborators in, and not mere beneficiaries of, academic pursuit. Our handling of, and our support systems for, them should be based on this principle. Care has to be exercised, however, not to stretch this understanding to its limit where students are treated like consumers, as is believed by some scholars to be the case in several Western universities.

Before concluding, what kind of personal academic target could an academic set? These targets could be such as to bring in both internal and external visibility of high quality to the twin-academic objectives of teaching and research to the individual, and hence to the institution. Working towards such targets often needs a long-term plan, but could be both personally and professionally rewarding.

## Author's Profile

KRISHNASAMY T. SELVAN has joined as Professor in the department in mid-June 2012. From 2005 to early June 2012, he was with the Department of Electrical and Electronic Engineering, University of Nottingham Malaysia Campus. He was also the Assistant Director of Teaching and Learning for the Faculty of Engineering and the founder-leader of the Applied Electromagnetics and Telecommunications Group. From January 1988 to February 2005, Selvan was with the Society for Applied Microwave Electronic Engineering and Research (SAMEER)- Centre for Electromagnetics, Madras, India. Here he was essentially involved in antenna analysis, design, and testing.

Selvan's professional interests include electromagnetics, horn antennas, printed antennas, metrology and electromagnetic education. In these areas, he has authored or coauthored a number of journal papers and conference presentations. Selvan was on the editorial board of the International Journal of RF and Microwave Computer-Aided Engineering during 2006 to 2011. He has been an academic editor for the International Journal on Antennas and Propagation since 2006. Selvan is a member of the Education Committee of the IEEE Antennas and Propagation Society. He is a senior member of the IEEE and a Fellow of the Higher Education Academy (UK).

## FACULTY NEWS

### RESEARCH NEWS

Our faculty members are actively involved in various projects funded by external agencies such as NIOT, AICTE, etc., apart from many projects supported by SSN Trust. Our faculty members encourage the undergraduates, post graduates and research scholars to energetically participate and dynamically engage themselves in many of these research projects. Investigators of these projects have periodic interactions with the expert members in the respective agencies and present their progress. To name a few:

- Dr. P. Vijayalakshmi presented the goal of her project to the "Ethical clearance committee" at Madras Medical College, Chennai and obtained the clearance for collecting speech data for the project funded by AICTE titled "Assessment and intelligibility modification for dysarthric speakers" on 10<sup>th</sup> Jul. 2012

- Dr. S. Radha & Mr. S. Sakthivel Murugan attended the Project Review Board meeting held at NIOT on 9<sup>th</sup> Oct. 2012 and presented the progress made during the past few months for the project titled "Design and hardware development of an adaptive filter to improve SNR due to wind driven ambient noise in shallow water".

- Dr. S. Radha and Dr. Premanand Chandramani, had an interaction meeting with CTO and CAG Global Program Office, Intel on 21<sup>st</sup> Aug. 2012 at CEDT, IISc Bangalore for the project grant received from Intel.

Our pursuit of research does not really stop with progress presentation but it continues with novel intuitions and methodical implementations. With many novel ideas many of our faculty members continue to submit their intuitions in the form of project proposals to external agencies. The short-listed intuitions are as follows:

Mr. W. Jino Hans, Assistant Professor received a grant of Rs. 1,25,000 from SSN Trust towards a project titled "Development of Image Super - Resolution Algorithm".

**Congratulations Jino Hans!!!**



- Dr. K. T. Selvan submitted a proposal to AICTE to conduct a FDP on the topic “Electromagnetic topics: From fundamentals through advanced”.
- Dr. Bindhu submitted a project proposal to AICTE on the topic “NBTI - aware design and analysis of FinFET based digital circuits”.
- Dr. R. Amutha & Dr. S. Radha, submitted a project proposal titled "Image communication over sensor network" to AICTE .
- Dr. N. Venkateswaran, Dr. V. Rajendren, Professor, Physics Dept. and Mr. W. Jino Hans, have presented a Research Proposal titled, “Development of Efficient Super Resolution Algorithms for Underwater Sonar Images” to Naval Research Board at New Delhi on 26<sup>th</sup> Oct. 2012.

### TECHNICAL PRESENTATIONS

ECE faculty members have served as resource persons in various training programs, workshops, invited talk series, etc., organized by various engineering colleges in and around the city, apart from being resourceful for many such events in our own Institution. To name a few:

- Dr. S. Radha, delivered a lecture on “Cognitive Radio” at the ISTE approved STP on Advanced Microwave and Optical Communication System at Tagore Engineering College, Chennai on 28<sup>th</sup> Jun. 2012. She also presented an invited talk on “Wireless sensor Networks for Industrial Applications” on 25<sup>th</sup> Sep. 2012 at St. Joseph’s College of Engineering, Chennai.
- Dr. N. Venkateswaran, delivered a lecture on, "Image feature extraction and PCA for Pattern Recognition" at the AICTE FDP on Recent trends in Machine Learning and Pattern Recognition held during Jul. 2<sup>nd</sup> - 7<sup>th</sup>, 2012, organized by the Department of CSE, SSNCE. He also delivered a lecture on, “Interference Cancellation in MIMO systems" at the National Level workshop on MIMO - OFDM wireless communications on 27<sup>th</sup> Sep. 2012 at

Anand Institute of Higher Technology, Chennai.

- Dr. K. T. Selvan, gave a lecture on “Perspectives on Professional attitudes” to PG scholars of ECE Department, SSNCE on 26<sup>th</sup> Jul. 2012.
- Dr. Premanand Chandramani, delivered a talk on "DSP IC and VLSI Circuit Technologies" at the National Level workshop on DSP Integrated Circuits on 17<sup>th</sup> Aug. 2012 at SSNCE.
- Dr. P. Vijayalakshmi, delivered a talk on "FIR Filter and Multirate Signal Processing" at the National Level workshop on DSP Integrated Circuits on 18<sup>th</sup> Aug. 2012 at SSNCE.
- Dr. R. Jayaparvathy, gave a talk on "Embedded and Real Time Systems” at SVS Group of Institutions, Coimbatore on 8<sup>th</sup> Sep. 2012.
- Mr. N. Prabagarane, delivered a lecture on, “Cooperative Communications" at the National Level workshop on MIMO - OFDM wireless communications on 28<sup>th</sup> Sep. 2012 at Anand Institute of Higher Technology, Chennai.
- Dr. R. Rajavel, delivered a lecture on, "Multi rate DSP and Its Application to Speech Compression" at the AICTE FDP on Digital Signal Processing 6<sup>th</sup> Dec. 2012, conducted by the Computer Center, Madras Institute of Technology, Chennai.
- Mr. S. Sakthivel Murugan, delivered a lecture on “Identification and extraction of acoustic signal in underwater channel using Empirical Mode Decomposition” to the research forum meeting held on 07<sup>th</sup> Dec. 2012 at Madras Institute of Technology, Chennai.
- Dr. K. T. Selvan, delivered a talk entitled "A story of Maxwell's displacement current" at an event organized in SSN jointly by IEEE - MTT Madras Chapter and IEEE - Student Chapter on 11<sup>th</sup> Dec. 2012.
- Dr. K. T. Selvan, delivered a lecture on "Aperture Antennas" at the FDP conducted by Agni College on TEchnology, Chennai on 12<sup>th</sup> Dec. 2012.

## WORKSHOPS & SHORT TERM COURSES

Department of ECE always play a vital role in the continuing education programmes by organizing various workshops for teaching faculty members, students and corporates.

- Very recently our department organized an Industry oriented short term course on "Wireless Technologies" in two phases during 28<sup>th</sup> & 29<sup>th</sup> Sep. and 6<sup>th</sup> Oct. 2012, for the employees of HCL Technologies, Vadapalani, Chennai.
- For the benefit of the student community the department has conducted a two day workshop on "Electronic System Design and Manufacturing" during 14<sup>th</sup> & 15<sup>th</sup> Sep. 2012. The workshop was sponsored by Ministry of Communication and Information Technology. In this workshop, Shri P. S. Narotra, Sr. Director, MCIT, New Delhi,

Dr. Ananth Krishnan, IIT Madras, Dr. Aniruddhan S., IIT Madras, Dr. Arup Ratan Saha, Synopsys Hyderabad and Mr. Rathnasabapathy, Bharat Electronics Ltd. participated and shared their experience on Electronics System Design.

- The department of ECE conducted a workshop on "DSP Integrated Circuits" during 17<sup>th</sup> & 18<sup>th</sup> Aug. 2012. 35 faculty members from various Engineering Colleges took part in the event. In this workshop, Dr. K. M. M Prabhu, Professor, Dept. of EE/IITM, delivered a talk on "Signal Processing Concepts for Integrated Circuits". Dr. B. Venkatramani, Professor, Dept. of ECE/NIT Trichy, gave a lecture on "DSP Architectures".

- Students are always motivated to do projects and take up research internships apart from their academic activities. In connection to this Mr. Srikanth, Manager - Business development, Visteon, addressed our pre - final and final year B.E students to undertake new projects and internship programs on 04<sup>th</sup> Oct. 2012.

## AWARDS & ACHIEVEMENTS

### Congratulations to Ms. Sreeja B.S. for completing her Ph.D

Ms. Sreeja B. S., Assistant Professor of our department has defended herself in front of the expert members and completed her Ph.D on 3<sup>rd</sup> Nov. 2012 under the guidance of Dr. S. Radha, HOD/ECE Department, SSNCE.

Her thesis focuses on the use of a High-Q Multi-Wall Carbon Nano-Tube (MWCNT) based pulse-shaped inductor in the implementation of an LC differential Voltage-Controlled Oscillator (LC VCO). The high quality factor of the inductor improves the overall quality factor and phase noise of the oscillator. The measurement results show that the LC VCO gives its best performance at 2.3982 GHz and achieves a phase noise of 133 dBc/Hz 1 MHz away from the carrier frequency. The VCO produces frequency tuning from 2.07 GHz to 2.77 GHz with an ultra low power consumption of 1.7 mW from a 0.6 V supply voltage. The output power level of the VCO is -10 dBm, with an improved quality factor of 49.



### Congratulations to Mr. A. Jawahar for completing his Ph.D

Mr. A. Jawahar, Associate Professor of our Department has defended his thesis in front of expert panel members and completed his Ph.D on 21<sup>st</sup> Dec. 2012 under the supervision of Dr. S. Radha HOD/ECE Department, SSNCE.

His research work focuses "Studies on Hybrid Topology Management Scheme for Wireless Sensor Networks (WSN)". The main constraint in WSN is that the sensor nodes have a battery of limited stored energy and the network lifetime gets reduced. A variety of energy efficient topology management schemes such as SPAN, STEM, GAF, BEES etc., are carried out for improving network parameters such as capacity, energy, coverage and latency. These schemes improve some parameters at the cost of some other important network parameters. To overcome these limitations, hybrid topology management scheme is proposed for two - dimensional as well as three - dimensional wireless sensor networks and observed improvement in the network parameters.



### Congratulations to the Best Teachers



Mr. S. Sakthivel Murugan, Assistant Professor and Mr. C. Vinoth Kumar, Assistant Professor received the Best Teachers Award for the academic year 2010 - 2011 from Thiru. Erode Tamizh Anban during the Teachers Day Celebration on 26<sup>th</sup> Sep.2012.



Congratulations to Dr. S. Radha Professor & Head, ECE Department, for being appointed as a NBA expert Committee member to evaluate the programmes for grant of NBA Accreditation, by NBA, New Delhi.



Congratulations to Dr. M. Ramakrishnan, Professor and Mr. Suresh R. Norman, Associate Professor who have been elected as "Fellow, The Institution of Engineers" (India) in the year 2012.



Congratulations to Ms. P. Kaythry faculty of our Department for receiving "Best NSS Programme Officer" award from Anna University, Chennai on 14<sup>th</sup> Dec. 2012.



## FACULTY RESEARCH HIGHLIGHTED ON JOURNAL COVERS

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

- Y. Phamila and R. Amutha, have published their research work entitled “Robust, Secure and Energy Efficient Image communication in Wireless camera Sensor networks”, in Int. Jl. of Advanced Computing (IJCA), Recent Science Publications. Vol. 35, No. 2, pp. - 239 - 245, Jul. 2012.



- S. Sakthivel Murugan, V. Natarajan, and S. Radha have published their research work titled “Adaptive algorithm testing to determine best adaptive filtering approaches for denoising signals affected by wind noise” in Sea Technology Magazine, pp. 42 - 45, Jul. 2012.

- V. Kumaravel, Y. Phamila and R. Amutha, have published their article entitled “Binary LBT based Energy Efficient Image Compression for WSN”, in CIIT Int. Jl. of Digital Image Processing, Vol. 4, No. 2, pp. 656 - 660, Jul. 2012.

- S. Shoba, Y. Phamila and R. Amutha, have published their article titled “Memory Efficient Image Compression Scheme for Multimedia Sensor Networks”, in CIIT Int. Jl. of Digital Image Processing, Vol. 4, No. 2, pp. 650 - 655, Jul. 2012.

- S. Sakthivel Murugan, V. Natarajan and R. Rajesh Kumar, have published their research article entitled “Estimation of Noise Model and Denoising of Wind Driven Ambient Noise in Shallow Water using the LMS Algorithm”, in Journal of Acoustic Australia, Vol. 40, No. 2, Aug. 2012.



- V. Vaithianathan, J. Raja, and R. Srinivasan, have published their work entitled "Performance Analysis of a 2 - 12 GHz Ultra Wide Band CMOS Low Noise Amplifier with High Gain and Linearity", in American Journal of Applied Sciences Vol. 9, No. 8, pp. 1150 - 1157, Sep. 2012.

- S. Sakthivel Murugan, and V. Natarajan have published their work titled “SNR and MSE analysis of KLMS algorithm for underwater acoustic communications”, in Journal of Marine Engineering and Technology, Vol. 11, No. 3, Sep. 2012.



- R. Kishore, S. Radha, and L. Cherly Flar, have published their research work titled "Improving Connectivity and Resilience using ECC based Key Predistribution for deployment Knowledge based WSN" in WSEAS Transactions on Communications, Vol. 11, Issue 9, pp. 309 - 320, Sep. 2012.

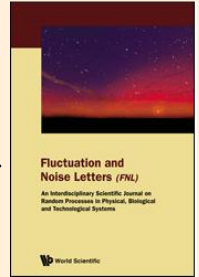
## FACULTY RESEARCH HIGHLIGHTED ON JOURNAL COVERS



- Edna Elizabeth. N, Radha. S, Priyanka. K, Bhavana. S, and Varsheeni. R have published their research work entitled “MCIA-Mitigating Colluding Injected Attacks in Mobile Ad Hoc Networks”, in European Journal of Scientific Research, Vol. 89, No. 4, pp. 582 - 593, Oct. 2012.

- S. Sakthivel Murugan, V. Natarajan, and S. Radha have published their research work entitled “Analysis of MNLMS and KLMS algorithm for underwater acoustic communication” in Journal of Fluctuation and Noise Letters, Vol. 11, No. 4, pp 1 - 11, Oct. 2012.

- S. Sakthivel Murugan, and V. Natarajan, have published their work titled “Implementation of threshold Detection Technique for extraction of composite signals against ambient noises in underwater communication using empirical Mode Decomposition” in Journal of Fluctuation and Noise Letters, Vol. 11, No. 4, pp 1 - 13, Nov. 2012.



## STUDENTS' CORNER

The young minds of our department are always encouraged, inspired and mentored by our faculty members to show their talents in various fields. They bring laurels to the department and to the institution as well. Three cheers to all our young achievers!!!

## TECHNICAL ACHIEVEMENTS

A project entitled "RF power inverter for low power domestic purposes" submitted by B. S. Renganathan, S. Ragavendran and V. Praveen Kumar of III year B.E./ECE under the guidance of Mr. S. Karthie Assistant Professor and Mr. K. J. Jegadish Kumar Assistant Professor, has been selected for the Phase-1 Analog Design Contest 2012-13 conducted by Texas Instruments, India.

Congratulations to **S. Rajeshwar**, II year ECE B, who has received award for ‘Oracle Think Quest’ held at San Francisco, California and won a Apple thin laptop and cash award of \$1000.



Oracle conducted an international competition on website designing and an international team with **S. RAJESHWER** (II year ECE-B) as a member secured the first place from several thousand other participants. For this feat he was invited to the oracle campus in San Fransisco on a full expense trip spanning five days involving various workshops organized by them. The trip culminated with a grand award ceremony to facilitate the winners of the various categories and was attended by several eminent personalities from all over the silicon valley. The prize consisted of a MAC book Air (\$1500) and a shield and several other oracle goodies such as bags, books, etc.



## SPORTS ACHIEVEMENTS

- Susmitha, I year ECE won four gold medals and three silver medals in the Anna University inter zone swimming competition held at Madurai on 11<sup>th</sup> Sep. 2012.

- N. Shankar, Final year ECE, secured gold medals in the shot put and Hammer throw events in the south zone Athletic meet organized by St. Joseph's Engineering College during 25<sup>th</sup> - 27<sup>th</sup>, Sep. 2012. He also won the gold medal for shot put event in the Chief minister Trophy organized by Sports Development Authority Tamilnadu on 29<sup>th</sup> Sep. 2012.

**Congratulations Shankar!!!**

- K. Suneri, Final year ECE, lead the Women Badminton team and have won the Winners trophy in Kongu Trophy organized by Kongu Engineering College, Perundurai held between 8<sup>th</sup> & 10<sup>th</sup> Sep. 2012.

- Kavya Kumar, Final year ECE, lead the Women Table Tennis team and have won the Runners up trophy in Kongu Trophy organized by Kongu Engineering College, Perundurai held between 8<sup>th</sup> & 10<sup>th</sup> Sep. 2012.

- I. Gohulalakshmi, I year ECE, represented the Tamilnadu State Badminton team and participated in the National Badminton Championship held at Imphal. during 14<sup>th</sup> - 19<sup>th</sup> Nov. 2012.

- Susmitha, I year ECE, participated in the Tamilnadu state Swimming competition held at Chennai during 16<sup>th</sup> - 18<sup>th</sup> Nov. 2012. She secured one gold, two silver and two bronze medals.

**Well done Susmitha!!!!**

## SERVICE TO THE COMMUNITY

- Ms. P. Kaythry, Assistant Professor and Mr. W. Jino Hans, Assistant Professor organized "Green March", a silent walk programme, to create an awareness on greener environment and healthy living at Thiruporur on 3<sup>rd</sup> Oct. 2012. 170 NSS Volunteers participated in the silent March.

- "**Vidiyal**" is an outreach programme organized by Shiv Nadar Foundations that aims for creating awareness on Higher education to rural Govt. Higher Secondary School students of Tamilnadu State. As a part of this, the first Outreach Programme was conducted in Thiruvannamalai district during 17<sup>th</sup> - 19<sup>th</sup> Oct. 2012. Dr. A. Jawahar, Associate Professor, Mr. W. Jino Hans, Assistant Professor and Mr. E. Tamilarasan, II year ECE were part of the team.

## PLACEMENT RECORDS

The placement record for ECE Department of SSNCE is impressive. Prominent companies such as Ericsson, Ford Tech, Renault, Lister Tech, Infosys, Zoho, Exeter, CTS, etc., visited so far, and picked up around 62% of the greatest talents of ECE department. As many other core companies are yet to visit, we hope 100% placement this year.

## FORTH COMING EVENTS

- National Conference on "Emerging Trends in Information and Communication Technologies" (NCETICT - 2K13), 22<sup>nd</sup> Mar. 2013.

- National level workshop on "Advances in Wireless Communication", 13<sup>th</sup> Mar. 2012.

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

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