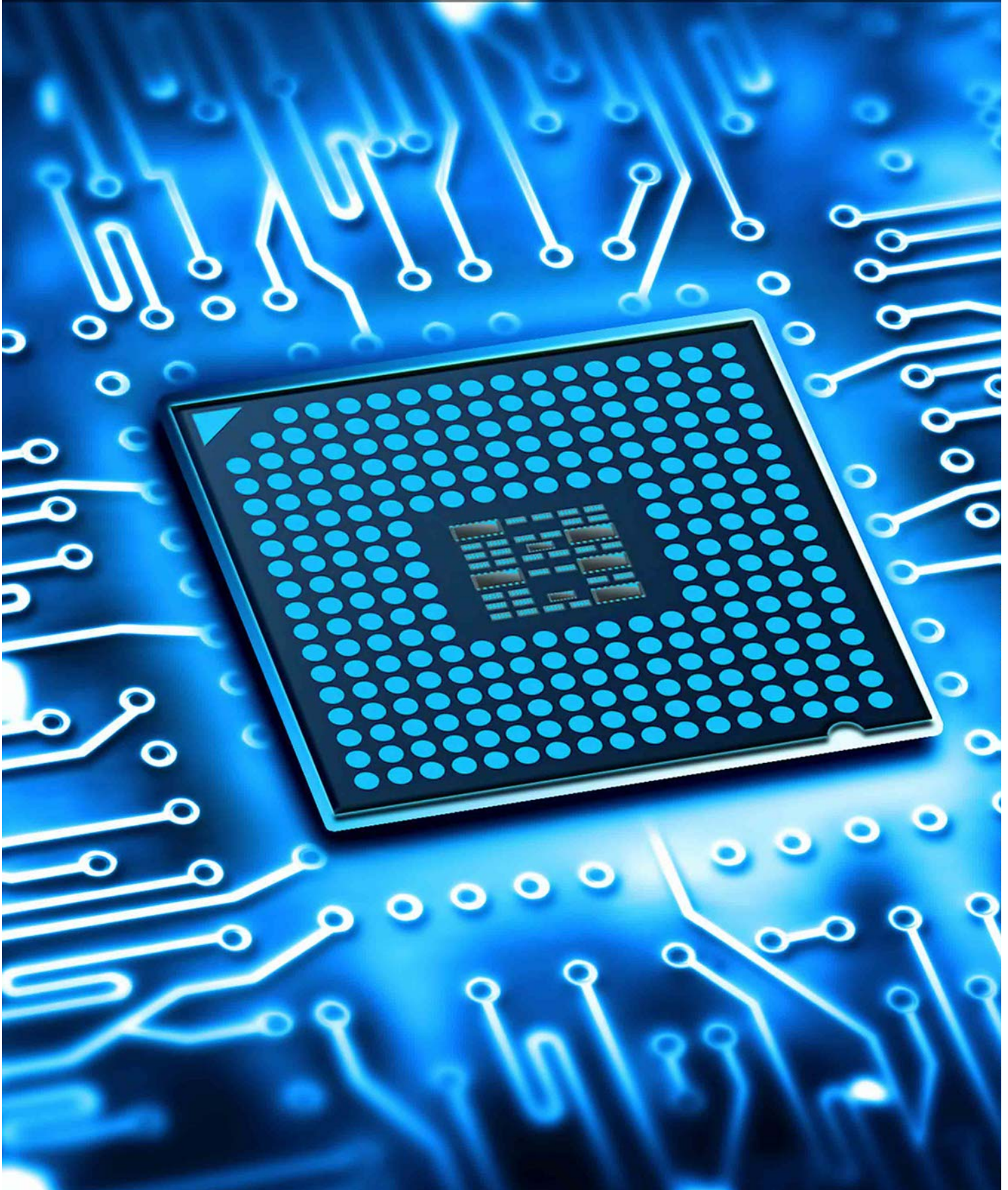
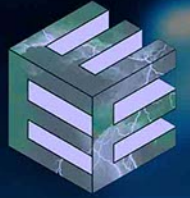


Department Of Electrical and Electronics Engineering
National Institute of Technology, Tiruchirappalli

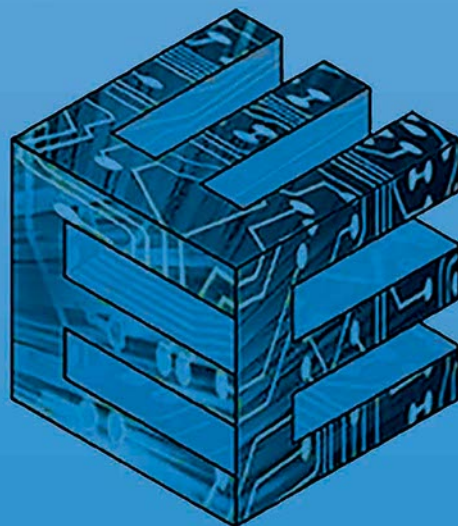


EEE NEWSLETTER



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EDITORIAL

Wish you every one happy and prosperous new year 2015.

On behalf of the faculty, staff and students and on my own behalf, I am happy to inform through this forum that our B.Tech. programme in Electrical and Electronics Engineering (EEE) has been given accreditation by NBA for five years, effective from 01.07.2014, this being the maximum period for which accreditation is granted to any engineering institution, as per the norms of NBA. This is in recognition of the outcome based education meticulously adopted by us in the academic processes, attainments of Programme Educational Objectives (PEOs) and Programme Outcomes (POs) and the achievements of our students and faculty. We once again thank everyone everyone who has spent long hours for consolidating all our curricular, co-curricular and extracurricular activities, preparing the documentation as per the NBA format and helping the entire process of accreditation. We should also acknowledge the sincere co-operation given by our Alumni who traveled all the way to Tiruchirappalli to participate in the process of accreditation. I am happy to mention in this context that our alumni have always been a source of great support to our development activities.



The department has now submitted the application to NBA for the accreditation of our M.Tech. Programmes, namely, Power Systems and Power Electronics. The PEOs and POs have been framed in consultation with the various stakeholders and for ready reference these statements are given in this news letter and also posted in the department web-site.

Our recent effort in arranging the delivery of certain courses by experts from industries is also helpful in giving an exposure to the students on the present trends in industrial practice in the concerned subject of study, apart from its theoretical concepts. Our department has now nine research laboratories, apart from the regular curriculum oriented ones. All these laboratories, completely managed by research scholars and equipped with latest sophisticated apparatus, hardware electronic components and software simulation tools are open to the scholars round the clock to pursue their research work. With such facilities, faculty and students carry out high quality research work, which is very evident from the large number of publications in reputed journals such as IEEE, IET & Elsevier and patents filed as the outcome of the innovative research findings.

Electrical and Electronics Engineering Association (EEEE) was formulated in the year 1990 and 2015 is earmarked as the Silver Jubilee Year of the EEE Association. It has been very successfully organizing its national level technical symposium called CURRENTS since 1993. The participation of our 2005 alumnus Mr. Hari Anand, Analog Engineer, Intel Bangalore, in the inauguration of EEEA in 2014 has been quite an inspiration to our students.

With the untiring efforts of all the members of the editorial board, this news letter steps into the fourth year and provides a wide coverage of all the activities of our department. I am glad to note that through this newsletter our students share their valuable experience in their company internships and visits abroad, which, I am sure, will further motivate our student community to actively participate in such co-curricular activities, strengthen their academic learning and achieve many more laurels in the days to come. At this juncture, I express my sincere thanks to everyone who has one way or other contributed for the success of the preparation of this newsletter.

I also wish that the year 2015 will also fill the department with a vibrant academic environment and bring in lot more innovative projects, creative technical activities and achievements by the students and faculty.


Dr. N. Kumaresan
Head of the Department, EEE

VISION & MISSION OF THE DEPARTMENT

VISION:

To be a centre of excellence in Electrical Energy Systems

MISSION:

- Empowering students and professionals with state-of-art knowledge and technological skills.
- Enabling Industries to adopt effective solutions in energy areas through research and consultancy.
- Evolving appropriate sustainable technologies for rural needs.

PROGRAMME EDUCATIONAL OBJECTIVES:

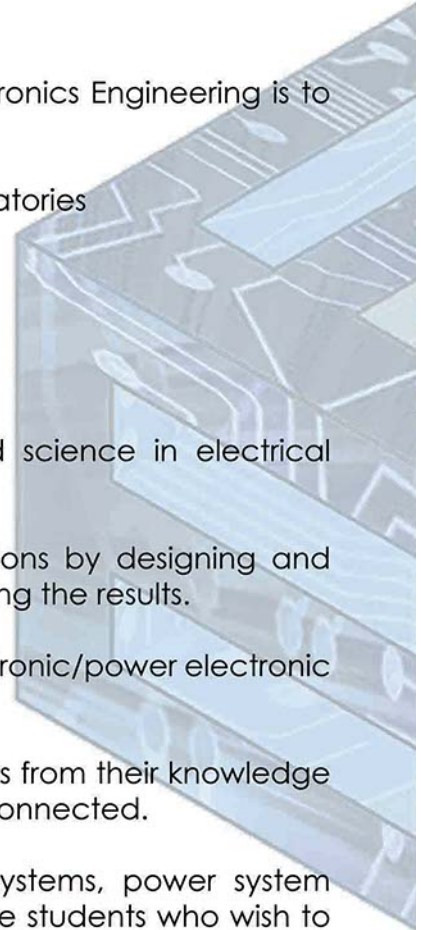
The main objective of the B.Tech. Programme in Electrical and Electronics Engineering is to prepare students for either one or more of the following:

1. Graduate study
2. Research and development work in government or industrial laboratories
3. Work in power sector and public sector undertakings
4. Work in electronic circuit design and fabrication industries
5. Work in IT and ITES industries

PROGRAMME OUTCOMES OBJECTIVES:

The students who have undergone the B.Tech. programme,

1. will have an ability to apply knowledge of mathematics and science in electrical engineering problems.
2. will have an ability to identify the problems and provide solutions by designing and conducting experiments, interpreting and analysing data, and reporting the results.
3. will have comprehensive understanding of the entire range of electronic/power electronic devices available.
4. will be able to control and convert power for industrial applications from their knowledge and exposure on different configurations into which the devices are connected.
5. will have in-depth knowledge in transmission and distribution systems, power system analysis and protection systems, which will be a shot in the arm of the students who wish to pursue a career in the power sector.
6. will have a good knowledge in data structures, object oriented programming, operating systems and computer architecture.
7. will have an ability to use the techniques & skills on modern Electrical & Electronics engineering software tools such as MATLAB, PSCAD, PSIM, PROTEUS VSM, ETAP, MiPOWER, OrCAD etc., for engineering practices.
8. will have sound knowledge in the areas of analog and digital electronics with added state-of art knowledge on VLSI systems.



9. will be able to take up projects related to electrical and electronic hardware implementations.

10. will be able to develop application programs related to modelling, simulation, instrumentation and control of engineering systems.

11. will have an ability to participate as members of engineering and science laboratory teams as well as members of multidisciplinary design teams.

12. will demonstrate the ability to choose and apply appropriate resource management techniques so as to optimally utilize the resources available.

13. will be proficient in English language in both verbal and written forms which will enable them to compete with graduates of international engineering institutions.

14. will have the confidence to apply engineering solutions in global and societal contexts.

15. should be capable of self-education and clearly understand the value of achieving perfection in their professional endeavours.

16. will understand and uphold professional, ethical and social responsibilities.

17. will be able to design and build renewable energy systems for developing clean energy and sustainable technologies.

COURSE OUTCOMES OF B.TECH PROGRAMME:

The students will :

1. Apply fundamentals of electrical and electronics engineering principles in real time practical applications.
2. Apply mathematics and science for solving / troubleshooting electrical and electronics engineering problems.
3. Develop confidence in handling real time systems and get involved in team effectively.
4. Develop working models/mini projects (wherever possible) for understanding the concepts.
5. Simulate the electrical system/ develop the software package for studying the electrical systems.
6. Develop the habit of self learning and preparing for competitive examinations.

Further each course of the programme will have will have specific objectives/course outcome(s) which are listed in the syllabi.

COURSE OUTCOMES OF M.TECH POWER SYSTEMS

A student who has undergone M.Tech. programme in Power Systems (PS) will:

1. have an ability to evaluate and analyse problems related to Power Systems and be able to synthesise the domain knowledge and incorporate the principles in the state of art systems for further enrichment
2. be able to critically investigate the prevailing complex PS scenarios and arrive at possible solutions independently, by applying the acquired theoretical and practical knowledge
3. be able to solve PS problems such as load flows, state estimation, fault analysis and stability studies
4. be able to develop broad-based economically viable solutions for unit commitment and scheduling
5. be able to identify optimal solutions for improvising power transfer capability, enhancing power quality and reliability
6. be able to evolve new schemes based on literature survey, and propose solutions through appropriate research methodologies, techniques and tools, and also by designing and conducting experiments
7. be able to interpret power system data and work on well-defined projects with well defined goals to provide real time solutions pertaining to PS
8. be able to develop, choose, learn and apply appropriate techniques, various resources including hardware and IT tools for modern power engineering, including prediction and modelling with an understanding of the limitations
9. be able to develop dedicated software for analysing and evaluating specific power system problems
10. be able to participate in collaborative-multidisciplinary engineering / research tasks and work as a team member in such tasks related to PS domain, giving due consideration to economic and financial intricacies, and lead the team in specific spheres
11. be able to confidently interact with the industrial experts for providing consultancy
be able to pursue challenging professional endeavours based on acquired competence and knowledge
12. be a responsible professional with intellectual integrity, code of conduct and ethics of research, being aware of the research outcomes and serve towards the sustainable development of the society
13. be capable of examining critically the outcomes of research and development independently without any external drive.

COURSE OUTCOMES OF M.TECH POWER ELECTRONICS

A student who has undergone M.Tech. programme in Power Electronics (PE) will:

1. have an ability to evaluate and analyse problems related to Power Electronic Systems and incorporate the principles in the state of art systems for further improvement
2. be able to investigate critical PE problems and to arrive at possible solutions independently, by applying theoretical and practical considerations
3. be able to solve PE problems such as switching control, converter design, analysis and control of solid state drives and stability studies
4. be able to develop appropriate power converters for sustainable energy technologies be able to identify optimal solutions for improvising power conversion and transfer capability, enhancing power quality and reliability through PE based solutions
5. be able to evolve new power electronic topologies and control schemes based on literature survey and propose solutions through appropriate research methodologies, techniques and tools, and also by designing and conducting experiments
6. be able to work on small, well-defined projects with particular goals to provide real time solutions pertaining to power electronics
7. be able to develop, choose, learn and apply appropriate techniques, various resources including sophisticated digital controllers and IT tools for modern power electronic system simulation, including prediction and modelling with existing constraints
8. be able to develop dedicated software for analysing and evaluating specific power electronics and control problems
9. be able to participate in collaborative-multidisciplinary engineering / research tasks and work as a team member in such tasks related to PE domain, giving due consideration to ecological and economical intricacies, and lead the team in specific areas
10. be able to confidently interact with the industrial experts for providing consultancy
11. be able to pursue challenging professional endeavours based on acquired competence and knowledge
12. be a responsible professional with intellectual integrity, code of conduct and ethics of research, being aware of the research outcomes and serve towards the sustainable development of the society
13. be capable of examining critically the outcomes of research and development independently without any external drive.

JOURNAL AND CONFERENCE PUBLICATIONS

JOURNAL PUBLICATIONS

1. P.Raja, N. Kumaresan and M. Subbiah - An Improved Delta-Star Switching Scheme for Reactive Power Saving in Three-Phase Induction Motors. *Journal of Frontiers in Energy*, Volume 8, Issue 3, pp 364-370, September 2014
2. Krishnasamy Vijayakumar, Natarajan Kumaresan, Nanjappagounder Ammasaigounden - Speed sensor-less maximum power point tracking and constant output power operation of wind-driven wound rotor induction generators. *International Journal on IET Power Electronics*. Vol. 8, Issue 1, pp. 33-46, Nov 2014 DOI: 10.1049/iet-pel.2013.0700
3. D.R. Binu Ben Jose, N. Ammasai Gounden and A.Vasanth - Hybrid Power Electronic Controller for combined operation of Constant Power and MPPT for single phase Grid-tied PV Systems. *IET Power Electronics*, Vol. 7 issue 12 ,pp. 3007-3016, Jan. 2015.
4. D. R. Binu Ben Jose, N. Ammasai Gounden and V. Rajesh - Power Electronic Interface with MPPT using Line Commutated Inverter for Grid-connected Permanent Magnet Synchronous Generator. *Electric Power Components and Systems*, Vol. 43 issue 5, pp. 543-555, Jan. 2015
5. M. Jaya Bharata Reddy, D.Venkata Rajesh, P. Gopakumar, and D. K. Mohanta - Smart Fault Location for Smart Grid Operation Using Remote Telemetry Unit (RTU) and Computational Intelligence Techniques. *IEEE Systems Journal*, Vol.08, Issue 4, pp.1260-1271, Dec.2014.
6. K Arthishri, R Balasubramanian, Parkavi Kathirvelu, Sishaj P Simon, Rengarajan Amirtharajan - Maximum Power Point Tracking of Photovoltaic Generation System using Artificial Neural Network with Improved Tracking Factor. *Journal of Applied Sciences*, vol. 14, Issue 16, 2014/8/15.
7. Pankaj Raghav. P , Ramesh.K.Govindarajan and G.Saravanallango - A Control Scheme with Performance Prediction for a PV fed Water Pumping System. *International Journal On Springer, Frontiers in energy*, Vol. 8, Issue 4, pp 480 – 489, Dec 2014.
8. Rajan Singaravel M.M. and Arul Daniel S. (2014) Studies on sizing of PMSG-PV hybrid system for battery charging of electric vehicles. Accepted for publication in *Frontiers in Energy (Springer)*. [DOI: 10.1007/s11708-015-0349-7]
9. M.M. Rajan Singaravel and S. Arul Daniel (2015) MPPT with single DC-DC converter and inverter for grid connected hybrid wind-driven PMSG-PV system, Accepted for publication in *IEEE Transaction on Industrial Electronics*. (SCI - Impact factor 6.5)
10. S. Krithiga, N. Ammasai Gounden, "A Power Electronic Configuration for the operation of PV System in Combined Grid-Connected and stand-alone modes", *IET-Power Electronics*, Vol. 7, No.3, pp. 640-647, 2014. (SCI – 1755-4535)
11. S. Krithiga, N. Ammasai Gounden, "An improved Power Electronic controller with unity power factor for single-stage grid tied PV systems", *Arabian Journal of Science and Engineering (Springer)*, Vol.39, No.10, pp.7173-7182. (SCI-1319-8025)
12. D.R. Binu Ben Jose N. Ammasai Gounden Jayashri Ravishankar , "Simple power electronic controller for photovoltaic fed grid-tied systems using line commutated inverter with fixed firing angle", *IET Power Electronics*, Vol.7,No.6, pp.1424-1434, 2014. (SCI – 1755-4535)

13. S. Krithiga , N. Ammasai Gounden, "Investigations of an improved PV system topology using Multilevel Boost converter and line commutated inverter with solutions to grid issues", Simulation Modeling Practice and theory (Elsevier), vol.42, pp.147-159, 2014 (SCI -1569-190X)
14. Alarmel Mangai, N. Ammasai Gounden, "PCA-Based Learning for Preceding Vehicle Classification", IET Intelligent Transport Systems, Vol. 8(1), pp.28-35, 2014. \neg (SCI - 1751-956X)
15. C. K. Aravind, G. Saravana Ilango, C. Nagamani, "An energy efficient switching scheme with reduced switching transients for a Wind Driven Induction Generator", Taylor and Francis, Electric Power Components and Systems, August 2014.(Accepted for publication)
16. C. K. Aravind, G. Saravana Ilango, C. Nagamani,"A smooth coordination control for a Hybrid Autonomous Power System (HAPS) with Battery Energy Storage (BES)", Frontiers in energy, Springer publication, August 2014. (Accepted for publication)
17. Srinivasa Rao. P, G. Saravana Ilango, C. Nagamani," Optimal Su-Do-Ku based Interconnection Scheme for Increased Power output from PV array under Partial Shading Conditions ", Frontiers in energy, Springer publication, August 2014. (Accepted for publication)
18. K. Sundareswaran, P. Sankar, P. Srinivasa Rao Nayak, Sishaj P Simon and S. Palani, "Enhanced Energy Output from a PV System Under Partial Shaded Conditions Through Artificial Bee Colony", IEEE Transactions On Sustainable Energy, Accepted for publication on 12/10/2014
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20. K. Sundareswaran, V. Vignesh Kumar and S. Palani, "Application of a combined particle swarm optimization and perturb and observe method for MPPT in PV systems under partial shading conditions," Renewable Energy, vol. 75, pp. 308-317, 2015.
21. K. Sundareswaran, P. Sankar, S. Palani, MPPT of PV Systems Under Partial Shaded Conditions Through a Colony of Flashing Fireflies, IEEE Transactions On Energy Conversion Vol. 29, pp. 463-472, 2014.
22. K. Sundareswaran, P. Sankar, S. Palani, ,"Application of random search method for maximum power point tracking in partially shaded photovoltaic systems," IET Renewable Power Generation. Vol. 8, 670 – 678, 2014.
23. Subramaniam Senthil Kumar, N. Kumaresan, M. Subbiah - 'Analysis and Control Of Capacitor – Excited Induction Generators Connected To a Micro-Grid Through Power Electronic Converters'. Accepted for publication in The Institution of Engineering and Technology Journal for Generation, Transmission and Distribution.
24. Enhanced Energy Output From a PV System Under Partial Shaded Conditions Through Artificial Bee Colony. IEEE Transactions on Sustainable Energy Vol. 6 No.1 pg. 198-209 January 2015.
K. Sundareswaran, P. Sankar, P. Srinivasa Rao Nayak, Sishaj P. Simon and Sankaran Palani
25. 'Disturbance Observer Based Adaptive Sliding Mode Control: An Application to Single Machine Infinite Bus Power System'. IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems (IEEE SPICES). Soumya Ranjan Sahoo, R. M. Brisilla and V. Sankaranarayanan.

26. 'Stabilization of Single Machine Infinite Bus System Using Adaptive Sliding Mode Control'.
Indian Control Conference 2015 at IIT Madras
Soumya Ranjan Sahoo, R. M. Brisilla and V. Sankaranarayanan
27. 'Hardware Realization of Fuzzy Based Cluster Head Selection in Wireless Sensor Networks'.
To be presented at the International Conference on Electronic Design Computer Network and Automated Verification during 29th and 30th January 2015 at Shillong, Meghalaya.
Hemavathi N. and Sudha S.
28. Dastagiri Reddy B., Selvan M. P. and Moorthi S., "Simplified Embedded Control Scheme for Two-Stage Multistring Off-Grid Inverter", IET Power Electronics, Vol. 7, No. 12, December 2014, pp. 2954-2963, SCI Indexed ISSN: 1755-4535.
29. Hrishikesan V. M., Venkatraman K. and Selvan M. P., "Performance of Custom Power Devices in SCIG based Windfarms during Abnormal Grid Conditions", IEEE International Conference INDICON – 2014, 11-13 December, 2014, Pune, India.
30. Asha Radhakrishnan and Selvan M. P., "Load Scheduling for Smart Energy Management in Residential Buildings with Renewable Sources", National Power Systems Conference (NPSC 2014) 18-20 December, 2014, IIT-Guwahati, India.
31. Hrishikesan V. M., Venkatraman K., Selvan M. P. and Moorthi S., "Application of D-STATCOM in SCIG based Wind-farms during Normal and Abnormal Grid Conditions", National Power Systems Conference (NPSC 2014), 18-20 December, 2014, IIT – Guwahati, India.
32. Analysis of FACTS devices on Security Constrained Unit Commitment problem
S. Sreejith, S. P. Simon, M. P. Selvan
International Journal of Electrical Power & Energy Systems 66, 280-293
SCUC problem for solar/thermal power system addressing smart grid issues using FF algorithm
K Chandrasekaran, SP Simon, NP Padhy
International Journal of Electrical Power & Energy Systems 62, 450-460
33. Cost benefit analysis on SVC and UPFC in a dynamic economic dispatch problem
S Sreejith, S P Simon
International Journal of Energy Sector Management 8 (3), 395-428
34. Maximum Power Point Tracking of Photovoltaic Generation System using Artificial Neural Network with Improved Tracking Factor.
K Arthishri, R Balasubramanian, P Kathirvelu, SP Simon, R Amirtharajan
Journal of Applied Sciences 14 (16)

CONFERENCE PUBLICATIONS

1. N. Hemavathi and Dr. S. Sudha - "A Fuzzy Based Predictive Cluster Head Selection Scheme for Wireless Sensor Networks" International Conference on Sensing Technology (ICST) 2014, Liverpool, UK Technically co-sponsored by IET and IOP, Date: 2.9.2014-4.09.2014
2. Dr. Sishaj P Simon - 2nd IEEE conference "Day Ahead prediction of Solar Power Output for Grid connected solar photovoltaics installations using Artificial Neural Networks" during 3rd – 6th December, 2014
3. C. S. Sandeep and Dr.M.Venkata Kirthiga - "Optimal Planning of Autonomous Micro-grid" 18th National Power Systems Conference during 18th – 20th December, 2014 organized by the Department of EEE, Indian Institute of Technology, Guwahati, Assam, India.

EEE ASSOCIATION INAUGURATION

The Electrical and Electronics Engineering Association (EEEE) of NIT Trichy was inaugurated for the year 2014-2015 on 22nd August, 2014. The chief guest of the occasion was Dr. V. Jagadeesh Kumar, professor of the Department of Electrical Engineering, IIT Madras. There was also a special guest, Mr. Hari Anand, analog engineer at Intel Bangalore and also an alumnus of NIT Trichy of the batch 2005. The event started by 10.20 a.m. with a prayer and lighting of the auspicious lamp by the guests. This was followed by a welcome address by the Director in which he praised the chief guest for his guidance in the field of technology in IIT Madras. He also praised the EEE department faculty and students for their enthusiastic academic and administrative participation. He expressed a need for greater student-alumni interaction, updating of curriculum to accommodate virtual classrooms and video conferencing, revamping laboratory system etc. After this, The Head of the Department, Dr. N. Kumaresan, addressed the audience. He praised the alumnus for volunteering to conduct a guest lecture on transistor scaling and encouraged all students to take part in all the activities (academic and co-curricular) of the department. This was followed by the introduction of all the office bearers and executive members of the EEE association by the faculty advisor of EEEA, Dr. M. Venkata Kirthiga. The office bearers included Chairman, Overall coordinator, Treasurer, Vice Chairman, Secretaries and Joint Secretary.



Then, the chairman of EEEA, Mr. Ashwath Amirthalingam announced the agenda for the year 2014-2015. It consisted of a yearlong activities like workshops and guest lectures aimed at promoting research and bridging the gap between industry and academic curriculum. He also stressed on the main activity of the EEEA, which is to host Currents, the national technical symposium of the EEE department of NIT Trichy. This was then followed by the introduction of the chief guest, Dr. V. Jagadeesh Kumar by the treasurer of EEEA, Mr. Koushik Krithivasan. This was followed by a presentation of memento to the chief guest by the Head of the Department. He then introduced the special guest, Mr. Hari Anand who was then presented with a memento by the faculty advisor of EEEA.

Thereafter, the EEE newsletter was inaugurated by the chief guest and received by the Head of the department. Also, the first exclusive web link for EEE Association was launched by Mr. Hari Anand. This was followed by the inaugural address by the chief guest. He was extremely moved by the enthusiasm of the students and wished that everyone benefits from the activities of the EEEA. This was followed by the address by the special guest, Mr. Hari Anand. He said that after meeting with other alumni, they had decided to volunteer for guest lectures for the institute's welfare. He also talked about how transistor scaling has propelled growth in semiconductor industry, which was the topic of his guest lecture later that afternoon.

This was followed by the vote of thanks by the Vice Chairman of EEEA, Mr. Anand Kumar. Finally, the inaugural ended with the national anthem.

CURRENTS 2015

CURRENTS is the annual technical symposium of the Department of Electrical and Electronics Engineering of NIT Tiruchirappalli. Students pursuing Electrical, Electronics, Communication and Instrumentation Engineering and even Diploma Courses from all colleges are hosted by our association every year.

CURRENTS was first conceived in the 1990s as a humble affair, by a group of enthusiastic members of the EEE fraternity here at NIT Trichy. Recent editions of the event have seen exponential growth, with the latest edition witnessing a record footfall of over a thousand participants.

Conveniently scheduled during the more relaxed days of a sapping and long Even Semester - JANUARY 30 - FEBRUARY 1, CURRENTS provides the perfect platform to showcase technical acumen, compete with peers and, most important of all, kindle inspiration. It has on offer, a plethora of innovative events, state-of-the-art workshops and the best guest lectures from the most revered academicians and industrialists.

The Events offered in this edition of Currents are:

- Lab Rat Race (A race to finish with electronic, electrical and MATLAB hurdles)
- Circuitrix (A circuit debugging contest)
- Currents Tech Quiz
- Maze Solver
- Electronic Arts (Art with a Trical twist. Make art from electronic components)
- Code Currents (Online coding contest)

In addition there is also Colloquium, the technical paper presentation event.

In the Workshops arena, there are six amazing workshops lined up:

- Robotic Arm
- Mobile Controlled Robotics
- Digital Design Using FPGA
- Solar Battery Charger
- PCB Design Workshop
- Image Processing Workshop

Finally, there is DHRUVA - the award for the most creative student.

Our flagship event this year called SPARK, is aimed towards reaching a solution for a social problem through the use of Electrical and Electronics Engineering. The event is being conducted in association with Nirmaan, an event in the annual technical symposium of the department of metallurgical engineering and material science, PADARTH. The shortlisted participants would be provided with the opportunity to present their projects in front of an esteemed panel of judges at NIT Trichy. The best entries will be admitted to the final round of Nirmaan at IIT Bombay.

Currents' 15 presents its participants with two phenomenal guest lectures designed to kindle inspiration in students and to disseminate them with the technological advancements in the field of electrical and electronics. Mr. Mithesh Goyal from Intel, our alumnus will give a lecture on the topic "SYSTEM ON CHIP". And we also have Mr. Prathap Srinivasan from Texas Instruments Bangalore, who will be giving a guest lecture on "Micro controllers and their applications in the Automotive industry focussing on Safety and Hazard".

EEEA ACTIVITIES

MOTION CONTROLLED ROBOTICS WORKSHOP



Following the inauguration of the EEE Association on August 22nd, a workshop on motion controlled robotics was conducted for the first years of all departments in the college. This workshop was managed solely by the members of the association (3rd and 2nd year students). It spanned for two days and covered the basics of robotics, electronics and mechanics, and was extended to accelerometer and RF control. The participants were given their own take-away kits which could even be used at later stages to further their interest in the field of robotics. By the end of the session the students learned how to make their own bot whose movements could be controlled with the help of sensors. The workshop received overwhelmingly positive reviews from all the participants and was a grand success.

MATLAB WORKSHOP

A Three day workshop on MATLAB was conducted by Dr. M. Venkata Kirthiga, Dr. P Raja and Mrs. S. Mageshwari from 22nd to 25th September 2014, under the care of the EEE Association. About 70 second year students registered for the workshop at a nominal fee of Rs.100. Topics on fundamentals and introduction of MATLAB, Simulation of DC systems and custom modeling, Modeling and simulations on DC Motors and DC Generators were dealt in detail. Total of four sessions were taken and refreshments were provided at the end of each session. The course was tailored to introduce



second years to MATLAB and was successful in its aim to educate students in designing and application of MATLAB.

HOUSEWIRING WORKSHOP

On 17th October, 2014, Dr. M.Venkata Kirthiga and Dr. P. Raja, organised a workshop on House Wiring for a practical learning experience for all years of EEE. The full day workshop covered details about house wiring and circuitry, machine windings and other useful information about the real world application of electrical and electronics principle. This was followed by a hands on session where students made common household circuits such as two way switch, fan and tube light connections and so on. They also observed electricity metres and observed their operation and prevention of tampering. The machine winding of motors commonly used such as in a mixer were also studied and a lesson was given in how to wind a basic machine.

The workshop was enriching and gave students what textbooks will never cover – practical knowledge. The students were also given a tester and an all-purpose screwdriver set as take away.

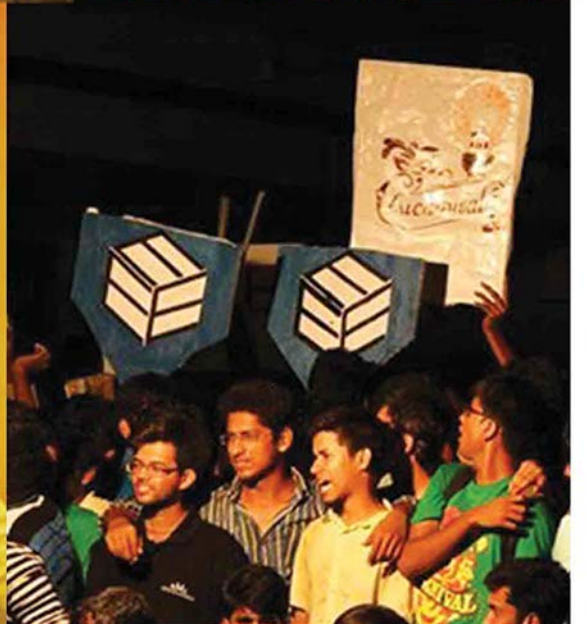
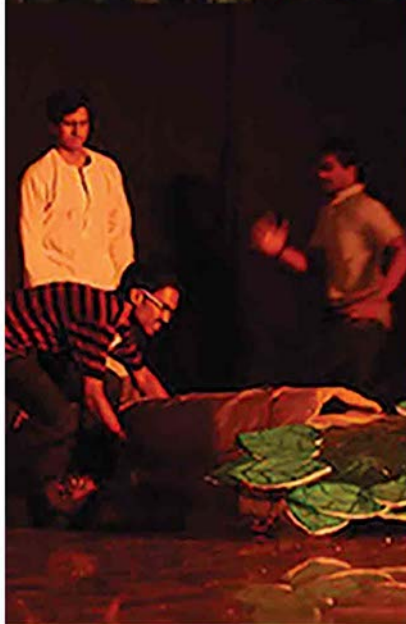


Time for Reminiscence





Some Glorious Memo



JOY OF GIVING WEEK

The Joy of Giving Week is the beginning of a national philanthropic movement. It is a platform for people from all walks of life to celebrate the joy of giving. It provides an opportunity to reach out to the less privileged by donating money, volunteering time, and encouraging a spirit of altruism etc. It is an event that motivates people to take initiative to do just one simple conscious act of giving.

In NIT Trichy, a collaborative effort of the different Clubs, namely Apekshaa, SEC, Pupil for Pupil Committee and Spirit-ed and HHNIT along with HumaNITTY to join hands on this drive to organize the Joy of Giving Week (JGW) which celebrates the act of giving. These clubs organize and conduct fund-raising activities in the NITT campus. The members of the clubs personally visited ashrams to spend time with the children there as a part of Joy of Giving Week. This is one of the biggest events of its kind and it is an annual celebration that brings in people from almost all walks of life together to make a difference. The clubs have reached out to different ashrams like New Life, Anbagam and Annai Ashram which are located in and around Trichy, to bring over 200 children to the campus to enable them to participate and unleash their hidden talents.

For this event, these clubs collected wishes from underprivileged children and orphans, and displayed it in the form of WISH TREE at four prime locations of Trichy. The wishes of many underprivileged would be written on chits and pasted onto the tree. Volunteer people visiting these places could try to fulfill wishes within their capacity. During the JG week, distribution of free Breakfast and Lunch for the Conductors and Drivers who pass by the NITT bus stop was organized.

The highlight of the week was HumaNITTY along with the EEE Association making a generous donation, over Rs.10,000 to 'Malarchi Ashram', a home for the destitute. This gesture of the donation and participation by EEEA is commendable and it encourages students to work towards such social welfare activities.



WORKSHOPS

SCILAB WORKSHOP

A three day workshop on SCILAB was conducted from December 15th to 17th, 2014 by Dr. Sishaj P. Simon of the EEE department in collaboration with the departments of ICE and Chemical Engineering. The three day workshop covered the following:

Day-1: Real Time Acquisition of Signals using various Sensors. Exporting the real time data in different file formats (.DAT/ASCII/XLS), Importing the Data in SCILAB, Up-sampling & Down-Sampling of Data, Filter Design & Noise Removal in Time Domain.

Day-2: Frequency Domain Representation of 1-D Signals using Fourier Transform. Filter Design in Frequency Domain, Feature Extraction in Time & Frequency Domain for Signal Analysis and Classification, Various Plotting options in SCILAB.

Day-3: Integrating the SIP & SIVP toolbox using SCILAB Module Manager, Loading different types of 2-D images, up-sampling & down-sampling of Images, Point Processing & Block Processing with Images, Spatial Domain and Frequency Domain Analysis & Processing of Image Signals.

FIREFLY WORKSHOP

A two day workshop on Implementation of Firefly Algorithm in SCILAB and μ -Controller was held on October 10-11, 2014 at the Electrical and Electronics Engineering department. The event was coordinated by Dr. K. Sundareswaran (Professor), Dr. Sishaj P Simon (Assistant Professor) and Dr. P. Srinivasarao Nayak (Assistant Professor). The workshop had a considerably large turn out with students from different colleges in Trichy attending on both days.

The firefly algorithm is a metaheuristic optimization program, inspired by the flashing behaviour of fireflies. The major applications of this algorithm are: 1. Digital Image Compression and Image Processing 2. Feature selection and Fault detection Most metaheuristic algorithms may have difficulty in dealing with stochastic test functions, and it seems that firefly algorithm can deal with stochastic test functions very efficiently. In addition, FA is also better for dealing with noisy optimization problems with ease of implementation.

The contents of the two day course included:

- Fundamental concepts of firefly algorithm and comparison with particle swarm optimization
- Tutorial and lab sessions on SCILAB and μ -Controller programming
- Scheduling problems in Power Systems with Implementation of firefly algorithm using SCILAB
 - Hardware implementation of firefly algorithm on a Microcontroller for Maximum Power Point Tracking in solar photovoltaic applications

The two day workshop aimed at explaining the fundamental concepts of the implementation of Firefly Algorithm applications in power systems and power electronics. Power systems scheduling operation using SCILAB and hardware implementation of FA on a microcontroller were also demonstrated.

ALUMNI INTERVIEW

It was a pleasure for the EEE Newsletter team to interview Mr. C. Sourabh Goyal, an alumnus of EEE branch from 2009 batch.

1. What are you doing presently?

Presently I am working as an Engineer in Hyderabad Research & Design Centre of United Technologies Corporation. My current project is on Intelligent Building Technologies, which primarily focuses on integrating various equipment/sub-systems of a building and in making building management systems smart enough to take decisions on their own. It can be briefly understood as giving consciousness to all the equipment in a building, from an elevator in lift lobby to an air vent. By interconnecting these equipments, collaborative decision making and maximum automation is achieved. Just imagine an elevator coming exclusively for you as soon as you enter your residential building and taking you to your floor, meanwhile AC turns ON beforehand so that when you reach your room, temperature is already maintained as per your comfort, and all these happening without pressing any button or giving any command to the system. And this is one of the simplest examples of what my current project aims for.

This field not only requires knowledge in fields of Machine Learning Algorithms, facial recognition, and other AI techniques but also domain specific knowledge in fields of HVAC, Access, fire & security, etc..

Apart from these I am pursuing part time post-graduation from IIIT Hyderabad, which is being sponsored by my company.

2. What was the reason behind your decision to choose EEE over any other department at REC Trichy?

Frankly speaking it was more of an accident rather than a conscious decision, and I believe that is the case with most of the people with respect to choice of their branches. I got fascinated with circuits and electromagnetism and realized that was something I wanted to do for rest of my life.

3. On a lighter note, how was it to attend the first hour classes? Did you always make it on time?

I am a morning person, so it wasn't that tough for me. But I never preferred the 8:30 class.

4. Of the four years spent at NIT Trichy, which can you recollect as your most favourite memory that you still cherish about the college?

Participating and preparing for NITTFEST. I guess those are the only times when one can actually connect with their departments. Long Live the NITTFEST spirit!

5. What was the best life lesson that NIT Trichy taught that you wish to share with the readers?

One of the best life lessons NIT taught me was that giving up comfort for a higher cause always pays off. Living in NIT is like living a life of an ascetic, but that pays off very well when you enter your professional life.

6. How big an influence has NIT Trichy made in your lifestyle?

A lot, not only in terms of lifestyle but also in terms of overall personality and thinking process, NIT Trichy had a lot of impact on me. Four years at NIT transformed me completely from what I was when I first entered the campus.

ALUMNI INTERVIEW

7. Apart from the curriculum, what all extra-curricular activities, teams or clubs did you involve yourself in?

I was not a part of any clubs of NITT but I was actively involved in co-founding the spiritual science club of NITT, named as DHRUVA during its initial stage. DHRUVA became an official club of NITT in my third year and I served as secretary for the club for a very short period of time. Later on I had to leave the club for some personal reasons.

Apart from that I was working with some start-ups on part time basis in fields of content designing, online marketing and crowd sourcing.

8. How different is life as a professional from life as a student? What advice would you give to the students who are going to enter the technical field as an engineer?

It's different in many ways and yet a little similar. As an engineer you always have to be a student and keep learning to keep yourself competent enough. As a student you don't have much to brainstorm about, problems are well defined and solutions exist already. In professional life, the problem is never well defined and you have to find the solution on your own. You have to be creative and innovative to find a solution which is not optimized in terms of time, effort and resources.

My only suggestion to those who are going to enter into technical field is to never stop learning and try different fields. Don't get stuck with a particular technology or domain. Industry today needs people who are technology gnostic.

9. What are your plans for the future?

After finishing up my post-graduation and gaining some more experience, I would like to start an enterprise of my own.

10. Any message you would like to convey to our readers?

Don't be a person who scores good marks but understands nothing. Focus on concepts. Also, don't forget to enjoy life at the same time. You will regret if you don't.

INDUSTRIAL INTERACTION

SIEMENS WORKSHOP

A one day industrial workshop on 'Programmable Logic Controllers and Variable Speed Drives' was organised by the department of Electrical and Electronics Engineering, NIT Trichy in collaboration with Siemens Ltd. The workshop was held on 7th November, 2014.

Mr. Mathew Samuel, General Manager (Plant Data Services), welcomed the participants and gave them a brief introduction of the topic. Mr. Sandeep Barde, Senior Manager (Plant Data Services), spoke about Programmable Logic Controllers in detail and its application in the industrial electromechanical processes. The topic of Variable Speed Drives was covered by Ms. Preeti Chandane, Manager (Plant Data Services).

Later, Mr. Ramkumar, Senior Manager (Sales & Marketing), lectured on Data Services and its role in Siemens Ltd. The session ended with the industrial experts sharing their experiences and solving the doubts of the participants. The workshop received a large positive feedback.

FACULTY VISIT

FACULTY VISIT TO OTHER UNIVERSITY:

Dr. Sishaj P. Simon attended the TEQIP II winter training session at the Indian Institute of Technology Roorkee (IITR). He worked under Dr. N. P. Padhy Ph.D, Professor in Department of Electrical Engineering, on the Real Time Digital Simulation project. The training commenced on 31 December 2014 and continued till 18 January 2015.

Real Time Digital Simulator or RTS, as the abbreviation recommended by IEEE committee on real-time simulator, provides power system simulation technology for fast, reliable, accurate and cost-effective study of power systems with complex High Voltage Alternating Current (HVAC) and High Voltage Direct Current (HVDC) networks. The real time digital simulator for Small Hydropower Plants has been established at the Alternate Hydro Energy Centre (AHEC) in IITR to design, simulate and impart training.

FACULTY VISIT FROM FOREIGN UNIVERSITY:

The department witnessed a visit by a member of the current IEEE Board of Directors, Professor James M. Conrad on 31st December 2014. Professor Conrad, who is a faculty at the University of North Carolina (UNC), Charlotte, is a Professional Engineer and a certified Project Management Professional (PMP). He has authored numerous books, journal articles and conference papers in the area of embedded systems, robotics, parallel processing and engineering education.

Professor Conrad interacted with the faculty and talked about the current technological needs in the area of embedded systems, the ever-growing need for research and also about IEEE.

INTERNSHIPS

TEXAS INSTRUMENTS UNNATI ANALOG PROGRAM

I was initially selected for TI's UnnaTI Analog Program through an online test which was conducted on campus in November. Two candidates were shortlisted from EEE, ECE & ICE. I had initially gone in with no expectations, so it was a pleasant surprise when I found out about my selection. However, this was just the beginning of my journey.

The 8-day training program was scheduled to take place at the Texas Instruments R&D HQ in Bangalore, with travel, food and accommodation being generously covered by TI. The training itself was a rigorous course on Signal Processing, Systems, Networks and Hardware. To say it was a challenge keeping up with the teachers would be an understatement. But the core principle driving the faculty and us was TI's belief that

we as engineers should not simply study the syllabus and go apply it in the exam and then be satisfied that, "I scored enough". Exams rarely test more than two or three concepts in a question, whereas when you are debugging a real-time problem, it encompasses all disciplines of engineering. We need to be inquisitive and understand what we learn down to the most fundamental concepts.

For me, the training was especially tougher as I was the only person selected from the EEE department and had no background knowledge on Signals & Systems. The program helped broaden my horizons, and I look forward to going for the second leg of the program, due to be held this summer.

- Deepayan Dasgupta
IInd Year EEE

INDUSTRY INTERNSHIPS

Shreya Shivakumar	P&G
Pooja Madhusoodhanan	Texas Instruments
Manish Kumar Kesari	Texas Instruments
Anand Kumar	Qualcomm
Ganesh Sundar	Fidelity Investments
Vignesh M	Goldman Sachs
Sudarshan Venkatraman	Credit Suisse
Jaiganesh Subbarayan	Dow Chemicals
Sattanaathan T	Alstom
Alok Kumar	Tata Steel
Abishek Namachiv	Tata Steel
Monish Kumar	Reliance
Prateek Shroff	Reliance
Anish C	Reliance
Sarkuna K	Hindustan Unilever Limited
Kaushik Ravi	Marico Ltd

RESEARCH INTERNSHIPS

Guru Raghav, Guru Pranesh, Pradeep Kumar	DAAD
Rounak Meyur, Varsha Sankar, Ramitha Sundhar	MITACS
Devalla Sripad	National University of Singapore

STUDENT PROJECTS

ROBOTIC ARM EQUIPPED SOLAR POWERED HYBRID ELECTRIC WHEELCHAIR

The Texas Instruments Innovation Design Contest 2015 saw active participation from EEE students. A team of students, including three from EEE, have cleared the first round and their project is under construction. A wheelchair with hybrid powering, mainly via rotatable solar panels fixed on top, has a pair of robotic arms with six degrees of freedom and a reach of 1.2 metres with a payload of 700 grams. This project aims to increase power efficiency by combining the existing 'Perturb and Observe' algorithm with the two mechanical degree of freedom solar tracking system, so that the algorithm is always applied at the point of maximum light intensity. The wheelchair motion is tracked using image processing, and the end effector of the arms are controlled by tracking the user's eye movement.

The arms are designed to perform coordinated tasks such as reading a newspaper, using a spoon, and so on. The robotic arm was modelled in state space and follows closed loop control.

– Sripad Krishna (EEE), Sattanaathan T (EEE),
Vishnu D (EEE), Haresh Miriyala (ICE),
Ashwin Narayanan (ECE)

DESIGN AND DEVELOPMENT OF SOLAR PANEL MOUNTED MONITORING DEVICE USING ZIGBEE SENSOR NETWORK

A team of students from third year have contested in the Innovation Design Contest by Texas Instruments. Their project aims to design a panel mounted monitoring device that follows ZigBee Communication protocol. In large solar plants isolated power loss incidents such as shading, hotspot formation and dust formation cause reduction in effective power production. In such cases, an arrangement is set up such that individual panels are monitored and the

data is collected via the ZigBee network. This innovative design can be implemented in solar power production facilities leading to increased efficiency. The team has cleared the first round of filtration among eight other teams in our campus.

– Sudharshan V (EEE), Deepak S (EEE)
Chandrasekar V(EEE), PSS Srivignesh(ECE)



STUDENT AWARDS:

OP JINDAL ENGINEERING AND MANAGEMENT SCHOLARSHIP

Guru Praanesh R, IIIrd Year

The OP Jindal Engineering and Management Scholarship (OPJEMS) are awarded every year to 100 engineering and management students from various Indian institutes every year. Every year, around three to four students from NIT-Trichy are selected for this scholarship, and I am proud to be selected once again this year.

The OPJEMS scholarship is a great opportunity for students to realize their leadership potential, and serves as an encouragement towards professional and personal development. It is a chance to test your communication skills, on-your-feet-thinking ability and professional ethics. For most freshers and sophomores, it is the time to prepare your first résumés, at least mentally, because the OPJEMS folks look for academic, co-curricular and extra-curricular excellence. Activities that are indicative of leadership skills will add more credit to your application.

To be eligible for a nomination to OPJEMS, you must be among the top 3 in your year, in a core branch (EEE, ICE and ECE come together under electrical), or MME. The nominations happen completely through the office of the Dean, Research and Consultancy. The nominees take a "leadership test" to assess leadership potential, and this "test" is simply a multiple choice, forced questionnaire asking you about your qualities and behaviour in different situations. Those who do well in the test will have to attend an interview in September, usually in Bangalore, although this year it was conducted via Skype on account of a clash with the cycle tests. Selected candidates are then awarded the scholarship based on their performance in the leadership test and interview (with 50-50 weightage). The award ceremony is a big affair with eminent industrialists and educationalists giving away the medals and certificates. The OPJEMS scholarship amount is INR 80,000 and is for a period of one year only, and you will have to get nominated and apply for it each year.

This scholarship has been a major motivational factor for me to perform well in both academics and extra-curricular activities. Through the leadership test, I got a better understanding of my strengths, and weaknesses (and that, I think, is its purpose), and some of my own responses surprised me. The personal interview, although not technical, comes with really tricky questions and the experience has given me the preparation and confidence to sit through another gruelling session before another set of interviewers. The best thing about this scholarship, I feel, is that it is based purely on merit, and the selection process does not take into consideration other aspects like financial status, scholarships etc., and the challenge is totally worth it.

STUDENT AWARDS:

CARGILL GLOBAL SCHOLARS PROGRAM 2014

Guru Raghav R, IIIInd Year

The Cargill Global Scholars Program is a scholarship exclusively for those studying second year undergraduate engineering in selected institutes across India, of which NIT-Trichy is a member. This Scholarship is offered in India, Brazil, China, the USA and Russia and is administered with the help of the Institute for International Education (IIE). It is a distinctive scholarship opportunity that not only provides financial support, but offers leadership development opportunities through seminars, networking events, and a one-on-one mentoring program. These enrichment activities have been designed to help foster and enhance the Cargill Global Scholars' leadership potential and critical thinking skills, and equip them with the tools necessary for becoming global leaders and decisions makers. This current year is second year of my program.

The applications for this scholarship were invited in January and those shortlisted were called for a personal interview in Delhi to test their leadership capability. Finally ten students were selected from all over India and they join a cohort of around sixty scholars from the five participating countries.

The leadership seminar held in Delhi in July 2014 was a three day event where executives from Cargill interacted with the scholars in an attempt to help each identify his or her own strengths and weaknesses; in other words to bring out the authentic leader in themselves. Further, mentors were assigned to each of us to provide assistance in professional as well as personal matters. They help in expanding our network as well as serving as a role model. In the second year of the program, five or more scholars from each country get to participate in a global leadership seminar along with students from all the five countries at one of Cargill's global locations. I hope to be one of them! This program has been one of the best experiences in my life and I wish to fully use this opportunity to improve my social and leadership skills.

STUDENT AWARDS:

CARGILL GLOBAL SCHOLARS PROGRAM 2014

Guru Praanesh R, IIIInd Year

The Cargill Global Scholarship is awarded to second year undergraduate students for excellence in academics and leadership potential. It is instituted by the Cargill Group through the Institute of International Education. The programme includes financial support of \$7500 over three years from second year onwards, and a mentorship programme, among other opportunities.

The selection is partly based on a rather lengthy online application, which involves writing a motivation essay, an essay on leadership and listing of academic, co-curricular and extra-curricular achievements. Based on the evaluation of this, the applicants are shortlisted for a personal interview with a panel of eminent educationalists. The top ten who display leadership potential are alone selected as Cargill Global Scholars from each of the 5 participating countries.

The first event of the scholarship programme is a leadership seminar through which we rediscover our personality traits, our potential and weaknesses. While on the outset the seminar did not look too promising, through its entire course we were engaged in fun activities like solving jigsaw puzzles as a team, building a tractor out of lego bricks and marketing it within 15 minutes, and even an auction for values such as "fame", "wealth" and "pleasure". The quality of the take-back far surpassed any expectations we had. We met with our mentors, who themselves are leaders at the very top in various Cargill companies. The mentorship programme is for the scholars to learn work culture and values, and to imbibe the qualities of leadership. There is also a "job shadow opportunity" where we get the unique opportunity to visit the mentor at their place of work for a day.

The Scholarship programme also includes a trip to the US where the scholars from all five participating countries meet for an international seminar. Even after graduation, we get to participate as alumni. The entire programme is fully funded, apart from the scholarship amount. This programme is a wonderful opportunity for me to develop leadership skills and realize my true potential and I look forward to the forthcoming events.

CONVOCAATION

More than a thousand people witnessed an event at the beginning of last semester that marked the culmination of all the years they had spent in this great institution. The college witnessed its 9th convocation on 2nd of August, 2014. The chief guest for this edition of the convocation was honourable Dr. Avinash Chander, Secretary, Department of Defence R&D, and Scientific Advisor to Raksha Mantri. Convocation 2014 witnessed a total of 1614 degrees being awarded to students of various B.Tech, B.Arch, M.Tech, M.Sc, M.C.A, M.B.A, M.S. and PhD programmes.

Of all the doctorate degrees handed out this year, three were received by the Electrical and Electronics fraternity. Apart from that, 47 postgraduate students from the field of Power Systems and Power Electronics and 95 undergraduate students received their respective degrees that day bringing the total to 142 degrees to the students of EEE.

The Institute Medals for the toppers of the EEE Department were awarded to Ramesh K Govindarajan from the B.Tech programme, R Narendra Sathvik from M.Tech Power Electronics programme, and Abhilash R S and Asha Radhakrishnan from the M.Tech Power Systems programme. The report by our honourable director Dr. S.Sundarrajan outlined in detail all the achievements, recognitions and awards received by the students and faculty of our prestigious institute and also mentioned the placement statistics of the Technical programmes. Dr.Rajaram Nityananda, Chariman BOG, NITT and the honourable chief guest talked about the achievements of our institute since its inception 50 years ago and encouraged students to venture further into innovation and research.

The event was a last chance at nostalgia and reminiscence for many people before they all moved ahead toward higher and better avenues in their life. It was a great convocation indeed.



GLORIOUS VIEW OF OUR DEPARTMENT

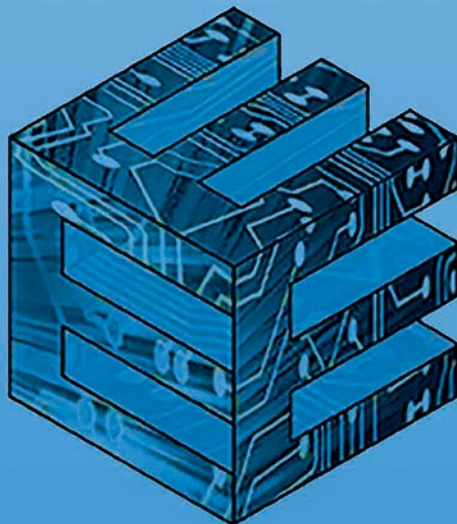


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"If something is important enough, even if the odds are against you, you should still do it.

-Elon Musk