

Department of Electrical and Electronics Engineering
National Institute of Technology Tiruchirappalli

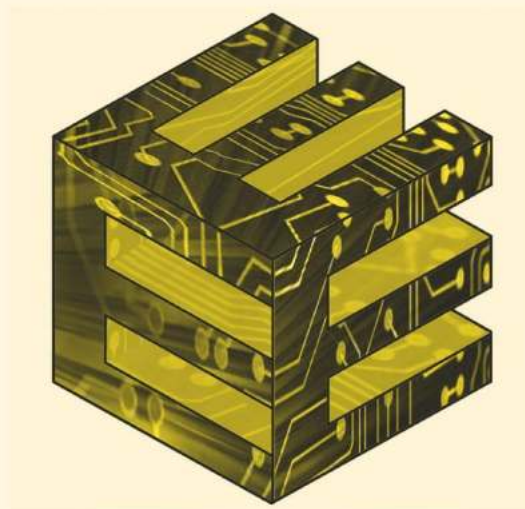


EEE NEWSLETTER



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EDITORIAL

Electrical and Electronics Engineering is one of the few departments started in 1964, at NIT, Tiruchirappalli, the then Regional Engineering college, which would be celebrating its Golden jubilee in the coming academic year 2013-14. Looking back into the past, we recall with sense of pride and satisfaction that it was the first department to be recognized by the then Madras University for conducting the Ph.D. program in 1974 and also for securing the status of QIP centre in 1986. To be in tune with advancing technology, seminars are being conducted frequently in all emerging areas in the field of electrical and electronics engineering. In this context, mention should be made of the workshops organized by the department in the early 1980s on Microprocessors with the help of experts from USA, even before such courses were planned and introduced in the curriculum.



Right from the beginning, our students have always been in the forefront, in taking up challenging projects and winning awards. Starting from the coveted Vincent Bendix awards by IEEE, the success story continues, and they participate TI Analog design contest, ANVESHAN 2012 to mention a few, and bring laurels to the department. Some of the other notable achievements of our students are securing the prestigious DAAD German and MITACS fellowships, OPJEMS scholarship and POSOCO power system award for a best Ph.D. thesis.

Our placement record has always been very impressive, with large number of students being placed year after year in highly reputed core companies and public sector units. Our alumni are also holding senior executive positions in industries as well as in academic institutions, both in India and abroad.

The high quality research work being pursued by the faculty and students is very evident from the large number of research papers being published in reputed journals such as IEEE, IET and Elsevier. In recognition of the expertise and commitment of the department in developing renewable energy sources and eco-friendly green environment, funded projects have been sanctioned by the DST, NaMPET (under the aegis of DIT), C-WET, Chennai and Power Grid Corporation, totally worth about 164 lakhs.

I am happy that the Electrical and Electronics Engineering association (EEEE) has started its work for this academic year and I wish that the present team further enhances the technical content and organizational structure of the activities.

As part of the Golden Jubilee year celebrations, the department is making several plans for modernization of the laboratories with state-of-art equipment and conduct of National and international conferences and series of industry related workshops and seminars. At this juncture, on behalf of the faculty, staff and students and on my own behalf, I express my sincere thanks to every one who has one way or other contributed to the growth and reputation of the department.

A handwritten signature in blue ink, appearing to read 'N. Kumaresan'.

(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 OF B.TECH PROGRAMME:

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 OF B.TECH PROGRAMME:

The students who have undergone the programme will

- a) have an ability to apply knowledge of mathematics and science in electrical engineering problem.
- b) have an ability to identify the problems and provide solutions by designing and conducting experiments, interpreting and analyzing data, and reporting the results.
- c) have comprehensive understanding of the entire range of electronic/Power electronic devices available.
- d) be able to control and convert power for industrial applications from their knowledge and exposure on different configurations into which the devices are connected.
- e) 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.
- f) have a good knowledge in data structures, object oriented programming, operating systems and computer architecture.
- g) 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 practice.
- h) have a sound knowledge in the areas of analog and digital Electronics with the added state-of art knowledge on VLSI systems.

- i) be able to take up projects related to electrical and electronic hardware implementations.
- j) be able to develop application programs related to modelling, simulation, instrumentation and control of engineering systems.
- k) will have an ability to participate as members of engineering and science laboratory teams, as well as members of multidisciplinary design teams.
- l) will demonstrate the ability to choose and apply appropriate resource management technique/s so as to optimally utilize the resources available.
- m) will be proficient in English language in both verbal and written forms which will enable them to compete with graduates of international engineering institutions.
- n) will have the confidence to apply engineering solutions in global and societal contexts.
- o) should be capable of self-education and clearly understand the value of achieving perfection in their professional endeavours.
- p) Will understand and uphold professional, ethical and social responsibilities.
- q) Will be able to design and develop renewable energy systems for cauterize to clean energy and sustainable technologies.

COURSE OUTCOMES OBJECTIVES 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.

SHORT COURSES

FUZZY SYSTEMS AND APPLICATIONS



People absorbed in the workshop

The self financed course which was coordinated by Dr. Simon, Dr. Sundareswaran and Mr. Srinivasarao Nayak, of the EEE department, conducted on 13th July, educated the 77 participants on the fundamental concepts of fuzzy logic theory. The audience, mainly comprising of research scholars and teachers, were also introduced to the use of fuzzy logic tool box available in MATLAB/Simulink. Further, the coordinators ventured into a few applications of fuzzy set theory in various fields.

POWER ELECTRONICS AND MEASUREMENTS

Power Electronics will play a dominant role in the 21st century in industrial and utility applications with increased emphasis on energy saving and preserving the green environment. Its application ranges from power supplies to motion control, factory automation, transportation, multi-megawatt industrial drives, power quality, electric power transmission / distribution and renewable energy systems.

For the benefit of the student community, the Department of EEE conducted a comprehensive workshop on "Power Electronics and Measurements" on the 2nd and 3rd of May 2013, under the aegis of Dr. N. Ammasai Gounden, Dr. N. Kumaresan and Dr. G. Saravana Ilango. The workshop had a number of technical sessions handled by experts includ-



Participants of the workshop

ing Schneider Electric, Bangalore and Power Electronics Group, CDAC, Tiruvananthapuram. M/s Tektronix, who had supported the workshop, provided hands-on training to the participants with the latest measuring equipments.

ANALOG ELECTRONICS

The Department of EEE hosted the two week long ISTE Main Workshop on Analog Electronics under the National Mission on Education through ICT (MHRD, Govt. of India) through online Live Lectures between 4th and 14th June 2013. This is the second Phase of Teach One Thousand Teachers previously run by IIT Bombay. Experts of the field Prof. Anindya Sundar Dhar, Prof. Pradip Mandal, Prof. Indrajit Chakrabarti and Prof. Achintya Halder conducted the workshop with Prof. Somnath Sengupta as the principal coordinator. The Lectures covered Amplifiers, Oscillators, Feedback Systems and Semiconductor Devices. The Lecture transmission and live interaction took place in distance mode using A-view technology through internet at NIT Trichy, which served as one of the remote centers to host the workshop. A total of 40 teachers attended the workshop from various colleges in Tamilnadu. Dr. Raja and Dr. Moorthi from the EEE department coordinated the entire course held at our premises. Faculty teaching analog electronics were highly benefited by this workshop.

PAPERS PUBLISHED BY STUDENTS AND FACULTY

1. P. Raja, M. P. Selvan and N. Kumaresan, "Enhancement of voltage stability margin in radial distribution systems with squirrel cage induction generator based DG's." IET proceedings, Transmission and Distribution Vol. 7, No. 8, August 2013, pp. 898-906
2. Raja Babu and S. Sudha, "DAG based feature additive XML schema generation for unstructured text", accepted for publication by Cyber C, Internet Conference on cyber-enabled distributive computing and knowledge discovery, Beijing China. (10-12 October 2013)
3. M. Jaya Bharata Reddy et.al., "Robust Transmission Line Fault Classification Using Wavelet Multi-resolution Analysis", Computers and Electrical Engineering (Elsevier publication), Vol.39, Issue 4, pp. 1219-1247, May 2013
4. M. Jaya Bharata Reddy et.al., "Condition Monitoring of 11kV Distribution System Insulators Incorporating Complex Imagery Using combined DOST-SVM Approach", IEEE Transactions on Dielectrics and Electrical Insulation, Vol. 20, Issue 2 pp. 664-674, April 2013
5. M. Jaya Bharata Reddy et.al., "Novel Multi-Stage Simulated Annealing for Optimal Placement of PMUs in Conjunction with Conventional Measurements", IEEE International conference on Environment and Electrical Engineering, (EEEIC-2013), 5-8th May 2013, Poland.(DOI:10.1109/2013.6549625)
6. S. Krithiga and N. Ammasai Gounden, "A Power Electronic Configuration for the operation of PV system in combined grid-connected and stand-alone modes", accepted in IET Power Electronics, 2013

EEE THANKSGIVING FOR TEACHERS

The thanksgiving from the final year students to the faculty of EEE department was held on the 26th of April, 2013. The Director, NITT graced the event with his presence as the chief guest. The Digital LED display board was unveiled on this occasion by the Director. The board was presented by the Currents 2013 team to the department. This was followed by a speech from the Director. Later, the faculty members addressed the students, sharing mutual experiences and fond memories of teaching. Students presented the faculty members with a token of appreciation. The event concluded with a group picture of all final years and faculty with the Director.

FACULTY VISIT TO FOREIGN UNIVERSITY

DR. S MOORTHY

MS. VENKATA KIRTHIGA

We visited the Nanyang Technological University of Singapore under the study and networking tour through TEQIP, during 1st – 9th July 2013. The Institute was decreed university status in 1991 and is now ranked 8th young university in the world (less than 50 years of age). The university is under the direct control of the ministry of education of Singapore. It offers under graduate courses in a wide spectrum of areas viz., Accountancy & Business, Art, Design & Media, Communication Studies, Education, Engineering, Humanities, Medicine, Science and Sports. It also offers many dual degree and integrated programmes. The university offers graduate and research programmes in about fifteen streams and the college of engineering encases six schools in which the School of Electrical and Electronics Engineering is one of the oldest.

Around 2700 students enroll in the engineering departments every year which includes 700 EEE students. About 20% of the strength is international students and surprisingly 50% of the faculty strength is also international. We felt a few proud moments to see many Indian students pursuing their higher education and our NITTians excelling over there in advanced research. We had the privilege to have one to one interaction with many professors over there who were kind enough in sharing their expertise in various fields and areas of their research interests.

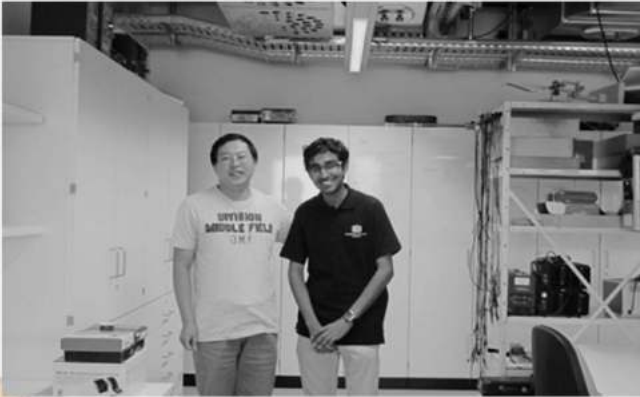
We were really astonished by the infra-structure both in the academic and residential zones of the university. They have developed many smart class rooms and huge lecture theatres fully equipped with updated electronic gadgets. Also they have an excellent multi-storey centralized library apart from individual departmental libraries which include isolated smart discussion rooms within library premise.

The university acts as a techno pool owing to its significant inter-disciplinary research and also encourages intensive industry institute interaction resulting in numerous sponsored projects. They contribute a lot towards reducing the global warming effects.

It was really a wonderful experience visiting Singapore to enjoy the pleasant weather with slight drizzles now and then. We gained some memorable moments while sight-seeing in Singapore.



DAAD WISE SCHOLARSHIP - GERMANY



I did my internship at the Chemnitz University of Technology, Germany in the summer of 2013. I was fortunate to be funded through the DAAD-WISE scholarship programme. I worked under the guidance of Prof. Olfa Kanoun who specializes in the field of Measurement and Sensor Technology. My project was titled 'Development of a Microcontroller based GUI for a Portable Measurement System'. I worked with a PIC32 series microcontroller from Microchip. My job was to interface the microcontroller with a LCD display integrated with a touch-screen. I had to build a prototype of the device, the framework for the Touch-screen and design a LCD based Graphic User Interface (GUI). The striking features of this device are its low cost and portability. The device will be used as a portable measurement system for impedance measurement. It can also be used to obtain the frequency response curves and a visual display of the measured data as 2D plots.



The internship turned out to be an enriching experience for me. I had the chance to interact with people from different countries like Germany, Nigeria and Tunisia. My supervisor was a gentleman from China. The internship provided good research exposure and an insight into European culture and their way of life. I also got the opportunity to visit a lot of countries in Europe - France, Switzerland, Netherlands, Italy and Austria. In short, it was like a dream come true.

Ramesh Govindarajan
IVth Year



I am back in India after a splendid summer internship in Germany. I spent my summer of 2013 interning at Institut für Regelungstechnik, Leibniz Universität Hannover, Germany as a part of DAAD-WISE program. The 2 month internship was packed with work and fun. I got valuable exposure to the research work being carried out in German universities and their impressive work culture and time management. Leibniz Universität Hannover, started in 1831 is one of the members of the TU9 universities of Germany. I worked in Department of Control Engineering or Institut für Regelungstechnik (IRT). My project was 'Evaluation of Finite Wordlength Realizations of Discrete Time Controllers'. The motivation behind the project was to study the way in which the behaviour of the controllers change due to finite wordlength realizations when practically implemented. Sometimes their behaviour could be extremely different from theoretically expected behaviour.

A framework has been suggested to analyse the effects of wordlength and designing optimised realization for digital filter and controller. My task was to check the applicability of the framework for various control algorithms with finite wordlength for fixed point representation. The behaviour of different realizations was obtained under different operating conditions using the FWR ToolBox in MATLAB. The simulations were verified by implementing the algorithms on STM32 Discovery microcontroller (with Free RTOS running on it) using fixed point representation.

I followed the German's 'Work Hard and Party Harder' philosophy during my internship. I lived in Hannover - The City of Fairs. I was fortunate to attend Schützenfest, the world's largest marksmen's festival. I never ran out of places to visit in Hannover. I spent my weekends visiting places in and outside Germany. I used to feel that I visited the most awesome place one weekend, only to be proven wrong the next weekend.

The BMW museum in Munich, Porsche museum in Stuttgart, The Berlin Wall, The World's largest ice caves, Alps in Switzerland and the Dark forest are some of the best places I visited during my stay in Germany.

Overall, I experienced the most enjoyable and equally useful two months of my life. I sincerely thank DAAD for this opportunity.

Kishore
IV Year (EEE)

Research Internship at the "Land of Ideas" was a 'dream come true' for me. After almost an hour long Skype interview for the selection process, I was given this golden opportunity by Prof. Dr. U. Schlichtmann of Electronic Design and Automation Department (EDA) at Technical University of Munich (TUM). I was overwhelmed when I also got selected for the prestigious DAAD scholarship for pursuing the research. My Research Internship was in the area of "Formal Verification of Hardware Circuits". I had to build a translator which could translate a subset of the netlist generated by the gate level synthesis of Verilog HDL to an open source formal verification software NuSMV. The Research Project was a success, as the translator built-up, v2NuSMV, translated a large subset of Verilog HDL than expected and is currently under extension by my mentor M.Sc. Alessandro Bernardini. As such a translator does not exist till now to the best of my knowledge, v2NuSMV will be put to open source in the near future so that it is accessible to the research community freely. Research experience at EDA of TUM was enthralling as the task was quite challenging and at the same time there was fun. Work culture at TUM was very comfortable, as there was no dress code for the lab, professors and mentors were very friendly and we had barbeques, parties and concerts at weekends. As the German work culture says - "Work hard and Party harder" - so be it, I followed that slogan for the two months of my Research Internship. Weekdays were quite hectic with a lot of work and on weekends there were trips with my colleagues to nearby countries, hiking, rafting and lots more. The internship was a great exposure and an enriching experience and also it had a significant impact on my career. I sincerely recommend and urge juniors to make use of the abundant and promising research opportunities that Germany offers and chase their academic dreams.

Deval Mehta
IVth Year

MITACS GLOBALINK - CANADA



When the results of MITACS Globalink 2013 came out, I was shocked to be selected for such a prestigious program and go to Canada to do my summer research at the University of British Columbia, Vancouver, Canada under Prof. Karthik Pattabiraman of Department of Electrical and Computer Engineering.

The summer of 2013 was the best time of my life till date; all the multitude of experiences that I had as a MITACS intern were breath-taking. The main purpose of the program is to give a first-hand experience of the world class research facilities and people at the universities in Canada. The reckoning and various inputs completely changed my viewpoint about countries, ideas of belongingness, professional and social understanding and much more.

My project was on "Smart Meter Security" where I worked on making the Smart Grid more secure and reliable. I had to develop an algorithm to detect the attacks on a smart meter and secure it from hackers. My mentor helped me a lot during the course of my project. There used to be a group paper reading session every week where everyone used to discuss on the paper over lunch. This definitely improved my technical knowledge on various areas all together. My Globalink experience included meeting with some high officials including Secretary of Higher Education, Shri Ashok Thakur of the Ministry of Human Resources Development in India and Smt. Malini Sen, National Editor of the "Education Times, Times of India".

My biggest take away was making awesome friends and learning to live life independently. All in all, it was a great experience working in Canada.

Aditie Garg
Btech IVth Year (EEE)

TIME FOR REMINISCENCE...



CURRENTS '13 ~ FUTURE HARDWIRED

Currents '13, the annual national level technical symposium of the Electrical and Electronics Engineering Department was conducted on the 12th, 13th and 14th of March 2013. This year's edition of Currents saw an overwhelming response with a record high registration of over one thousand students for the events and workshops. There were a total of seven events, four guest lectures and five workshops.



EEE Newsletter Release during Inauguration



Mr. Jeff Stamstad addressing the students

Inauguration:

The symposium was inaugurated on the 13th of March in the presence of Mr. Jeff Stamstad from Schneider Electric, India, the HoD Dr. N Kumaresan and the faculty advisor Mr. P S Nayak. The inauguration was followed by a guest lecture by Mr. Stamstad on "Universal Power Supplies". Mr. K.R. Rajbarath, Chairman of the EEEA, presented the welcome address and Ms. Satya Jayadev, the overall co-ordinator of Currents '13 presented the annual report on the activities of the EEE Association for the academic year 2012-13. The 3rd edition of the EEE newsletter was released during the inauguration.

Workshops:

There were 5 workshops conducted during currents which included ARM Cortex M4, MATLAB, Mobi -Robotics, FPGAs and NI Labview. The workshops saw a total participation of over 700 students from various engineering colleges in and around Trichy. The Mobi-Robotics workshop was conducted by a team from Robosapiens, IIT Delhi and the Lab View Workshop by a team from National Instruments. The ARM Cortex M4 and the FPGA workshops were conducted by the students of our department and the MATLAB workshop by faculty members - Dr. P. Raja and Ms. Venkata Krithiga.

Events:

The highlight of this year's events at Currents was 'DHRUVA', the award for the most creative EEE student. The award was instituted by Mr. Adak, in the memory of his son, an alumnus of the EEE department. As per Mr. Adak's wishes, there were three overall prizes given after a creativity round followed by a stress interview conducted by Mr. J. Nedumaran. The other events included Colloquium (project/paper presentation), Lab Rat Race (Electronics debugging contest), Rush Hour (A line follower robotics competition), Circuitrix (Circuit Designing Contest), Currents Quiz and Electronic Arts (Art contest using electronic components).



Students during guest lecture



HoD presenting a memento to Mr. Nedumaran

Guest Lectures:

The first in the guest lectures series was by Mr. Stamstad from Schneider Electric on "Universal Power Supplies". The next in the guest lecture series was by Mr. Pradeep Deshpande, the head of recruitment for Schneider Electric India Operations who spoke to the students on cracking the HR interview and encouraged the students to follow their dreams. Dr. P Murali Krishna, a research scientist in the Naval Physical and Oceanographic Laboratory (DRDO) at Kochi presented the next guest lecture on "Channelizer Design for Wireless Transceivers: Think Digital, Act Digital". He presented his work on digital encoding and decoding for digital transceivers. Mr. J. Nedumaran, the chief engineer at Neyveli Lignite Corporation Ltd. presented the last guest lecture on Demystifying Electrical Power Generation and Transmission with respect to the power situation in Tamil Nadu. The guest lectures were a huge success with an enthusiastic participation from students.

UPCOMING EVENTS

The EEE Association has planned several activities to benefit the students of the EEE Department. They will be organised completely by the Association members for the academic year 2013-14. Some of the activities planned are as follows:

1. MATLAB Workshop
2. Placement Oriented Classes on Digital Electronics and Electrical Machines
3. Currents' 14 Curtain Raiser
4. Currents' 14
5. Guest Lecture Series with Industry and University Partners
6. Industrial Visits

STUDENT INTERSHIP EXPERIENCES:

TEXAS INSTRUMENTS

I interned at Texas Instruments India, in the Wireless Connectivity Solutions team in Analog Profile. My project was to design a Current Steering DAC for a WLAN transmitter. The internship program was a wonderful learning experience. It was a complete eye-opener since we put all those theories learnt in class to a practical use. Students were allotted sub-projects which were apart of other on-going major projects. Highly experienced employees were appointed to mentor the interns. The internship gave me a firsthand experience of the corporate work culture and an insight into the topics under research in the electronics industry.

-MANDAKINI

I did my internship in Texas Instruments Incorporated (India). The two month internship was a life time experience through which I learnt various aspects about corporate culture, balancing work and life, team work, business communication skills, presentation skills and not to forget, the technical knowledge. TI offers a world-class internship program called 'UnnaTI', where the interns are treated like any other employee and are offered a variety of skills that is required by the industry. I was a part of a team that was currently working on a particular task on a TI product. I was assigned an important piece of work required by the team, and this made me feel important in the team. My mentor was very helpful and affable. I was a part of the many team meetings that were scheduled during my internship period. I also attended a couple of Power Lunches where the intern gets to interact with senior leaders of TI over a lunch session. Apart from these, I attended various technical and non-technical knowledge building sessions conducted by top-notch people in the industry, that were organized specifically for the interns. The interns were given access to TEXINS, TI's sport complex, that helped me to refresh whenever required.

One of the many things that every employee and intern likes about TI is the work culture prevalent there, which emphasizes on flexible work timings and balancing work and life.

-DINESH

I was very excited when I was selected for the 2 months internship programme with Texas Instruments. My project was titled 'Ground Plane Detection' which is an Image Segmentation application. It was really interesting and I had a great time working with my mentor. My mentor helped me a lot during the whole course of my project. The multitude of experience that I had as intern at Texas Instruments was breath-taking. I got to know many real and useful practical applications of Image Processing which I would not have been exposed to if I hadn't got that opportunity. The Power lunches with the higher ups of Texas Instruments was really improved my knowledge on various areas. I was able to come up with an IEEE paper in 2 months time with valuable content because of my mentor's guidance. Apart from the project work, we had team outings which were fun. We also had a sports club inside the campus. On the whole, it was a very useful and enjoyable experience.

-SURYA

PROCTER & GAMBLE

Working with P&G was not just a learning process, but a lot more than that. Right from the first day, the work plan of internship was interesting as well as challenging, only getting better as it progressed. I was given complete freedom and authority to take decisions like any other P&G employee.

My project title was 'Designing Engineering Solutions to enable 30% Gender Diversity in India Dry Laundry Making & Packing Operations for P&G Hyderabad'. The project demanded observation and learning of the 'Making & Packing Operations' of Tide & Ariel in P&G Baddi (Chandigarh) and P&G Mandideep (Bhopal). It required the identification of tough tasks for women operators on shop-floor, designing and procuring solutions from suitable vendors and drafting cost estimate and net profit value for the proposed solutions.

My project demanded observation of specific activities that can be performed only when machines are shutdown. They arranged an unplanned shutdown of a machine for 30 minutes without thinking about its impact on productivity which shows the extent to which they value an intern. My internship boosted my confidence through interactions with employees of different cadre and nurtured in me the skill of thinking from different possible perspectives to come up with cost effective and best in class solutions. Moreover, the dynamic work culture of 'No Hierarchy' and 'setting standards for every minute thing' in the workplace stands high on my note. In addition, I had amazing fun with my Guide, Mentor and project sponsor and the engineering team which gave a perfect finishing touch to my internship.

-ROHINI

ITC

I interned with Foods Business Division of ITC in the summer of 2013 as a part of their Knowledge, Initiative and Talent Excellence Series (KITES) program. I worked in the noodles (Brand Yippee) production line in Ranjangaon, Pune. My project required me to improve the oil and 'maida' yield of noodles. In simple words, I had to minimize the wastages and oil uptake occurring in the noodle line. I was mentored by the Production manager, who gave me complete freedom to conduct as many trials possible on the line. Each trial was associated with a lot of data collection and intense data analysis. I had to deduce the problem in the line from the analysis of data, and find out the appropriate solution and ultimately implement it. Certain instances required me to approach vendors for solutions as well. During the two month period there were 2 mid reviews and 3 final reviews to evaluate my performance.

While technically I was only an intern with ITC, I was allowed to attend group discussions with managers and also take on-spot decisions during production when a problem occurred on the line. I was given the freedom to adjust process parameters. ITC believes in giving customers high quality products at an economical price. This required the people behind each product to work very hard to deliver excellent results. Hence the work was very demanding and there were no fixed working hours.

The best part in ITC was the people in ITC. They were supportive; willing to take the blame for certain faults I made and always ready to share their ideas. The interaction with the HR personnel and managers was a very enriching experience in terms of building my work ethics and improving my time management and multi-tasking skills.

In spite of the long working hours and tough reviews, the internship with ITC was an eventful and wholesome experience and nothing short of surprises.

-VIVEKANANDAN B

TATA STEEL

I was one of the lucky few candidates to be selected for the Summer Internship Program 2013 at TATA STEEL. My internship started off on 20th May and projects were assigned to each of us. The beginning few days were filled with safety training and a brief orientation program. Everyone was issued an Identity Card and we officially started working on our projects. My project was based on 'GAS ANALYZERS' which was entirely new to me. Initially the project posed some difficulties due to my inexperience in that particular field. Most of my work was centred on Oxygen Furnaces which was a challenging topic. But the team at TATA STEEL showed a lot of support and guided me expertly during the length of my project. It was an amazing learning experience where I learnt something new through the project and interacted with senior employee in the company. The overall experience was enriching.

-PRATYUSH

I was fortunate to get selected at TATA STEEL for the Summer Internship Program 2013. The first couple of days were general orientation, safety training and issuance of ID cards. Subsequently all interns were given a list of projects. The projects were aimed at providing solutions to real-time engineering problems faced by them. We were permitted to choose a topic from our area of interest. We were also assigned guides who oversaw our project, and gave vital practical insights. The subsequent weeks were spent in working on our projects. Evaluations consisted of a mid and final review where we had to make presentations regarding the progress of our project. The total internship lasted for 8 weeks which I thoroughly enjoyed. The accommodation and food provided was very good. The experience provided a vivid glimpse into the corporate world.

In the end, I can say that I gained valuable experience, grew in confidence and made a lot of new friends.

-SACHIN SANTOSH

QUALCOMM

Imagine an average NITT day. Add to that, plenty of valuable corporate exposure, lots of free beverages, good food, awesome accommodation and the occasional trip to a theme park or a movie, and you'd still fall short of events to describe my overall intern experience!

Be it because of their ongoing projects, or their unique Open-Door Policy, or their insanely cool work culture, every moment spent there was loaded with work and fun. Apart from having firsthand experience working on some really innovative projects, I got to know the current demands and trends of the market, whilst suggesting ideas pertaining to the same. Working on a pre-assigned project with a team, attending meetings and interacting with senior officials is, as it turns out, more exuberant than it sounds! The work done there is indeed groundbreaking, and as always it feels good to be a part of it. Besides, it is a common mantra followed by everyone at QUALCOMM that a day spent solely at one's workspace is a day of complete unproductiveness. Hence, it is not entirely uncommon to see people hitting the indoor gym during the evenings, or challenging each other to matches after matches of football, table tennis and what not. We went on various excursions to nearby places, which gave us ample opportunity to interact with our co-interns and know their experiences in and out of college. At the end, only one word is enough to describe the experience: Brilliant! One policy that really impressed me is that everyone, interns and employees alike, is treated equally at work. Everyone is approachable and they always welcome new, innovative ideas. All said and done, it was indeed a memorable and once-in-a-lifetime experience.

-AKHILESH

DOW CHEMICALS

I was selected to pursue my summer internship at Dow Chemicals Intl. Pvt. Ltd., India Engineering Center, Chennai. The Dow leadership was very gracious and made every effort to make us feel comfortable in the new environment. After the usual ice-breaking session, I was directed to my project guide. I was supposed to work on the electrical design of crucial project in the pipeline. It mostly required sound knowledge of Power System Analysis and basic Circuit Theory.

The project gave me an opportunity to learn ETAP, a simulation package for power system analysis, and understand the relevance of load flow and short circuit studies in designing a production plant. I realized that contrary to the popular myth I wouldn't have made the best use of this internship had I not been thorough in the so-called 'outdated' theoretical knowledge.

Apart from technical learning, exposure to the corporate culture and work environment was another point in the learning curve. PUNCTUALITY, I learnt is the most important trait required when students like us start working. There was complete freedom in terms of work and office hours, but this privilege sure backfires if it is not amalgamated with a sense of responsibility on our end.

At the end of it all, I can surely look back and say with conviction that it was an once-in-a-lifetime opportunity and learning small yet new things which no book can teach.

-SHIVAM SHUKLA

RELIANCE INDUSTRIES LIMITED

I interned in Reliance Industries Limited this summer. I was posted in Jamnagar Manufacturing Division which is the world's largest grass-root petroleum refinery. It's actually quite surprising how a refinery that big works like clockwork. They have state of the art safety measures which all the interns were briefed about, lowering the risks involved with working in a refinery and adjoining petrochemical plants

considerably. The intern was an enriching experience where we got first-hand field experience not only on things related to the topic assigned to us but on literally any aspect of the industry. Even though we were interns, we were given full access to all the resources and the freedom to approach any employee regarding any queries we might have about the project assigned to us or the refinery in general apart from a dedicated mentor and guide.

My project was on "Differential Protection Scheme of Skin Effect Heat Traced Pipelines" wherein I worked on the different types of heat tracing used in a petroleum industry with special focus on skin effect heat tracing of vacuum residue and low sulphur waxy residue pipelines and its protection schemes especially differential protection of the heat cable using differential relays and remote PLC panel. I also got to monitor the preventive maintenance of various substations and captive power plants. I finally got to see the real-time applications of the machines and power system components we learn about. In short my intern in Jamnagar Manufacturing Division of Reliance Industries Ltd. was an enjoyable but great learning experience.

- RINITHA A

TOP GATE SCORERS OF EEE DEPARTMENT

NAME	MARKS	ALL INDIA RANK
ABHISHEK R S	838	20
DEEPAK KUMAR	777	69
HARISH SUDHAKARAN	621	861
SURAJ KUMAR	574	1435
NIRMAL M	570	1484
V.V.N AVINASH	567	1554
RANJITH KUMAR S	547	1876
RAJEEV RANJAN	537	2108
PRAMOD KHINCHI	427	5794
VIGNESH KUMAR R	414	6465
PAVITHRA B J	394	7637
B JAGANNATHAN	367	9496
PARDEEP KUMAR BISHNOI	344	11500

STUDENT PRIZES AT COMPETITIONS

SCHNEIDER ELECTRIC'S BLAZE 2013 ENERGY EFFICIENCY CONTEST



Team Members: Sirisha J. Aditi Sinha Aman Srivastava Manik Aggarwal Aditie Garg

It all started in early March with BLAZE 2013 banners all over the campus, an energy audit competition organized by Schneider-electric, an organization which is very much keen in developing green technologies. Four of us from EEE and one from Production Engineering department joined together to work for this competition. The very first round was a green idea generation where we came out with an idea to conserve vibrational energy using MEMS technology (Micro Electrical Mechanical Systems) which was eventually selected for the next round.

Thereafter we had to submit a white paper on the topic "Energy Efficiency First" where we jotted down many other technologies involving smart grid, rice husk ash insulation, optical energy, automotive efficiency and manufacturing technologies which qualified us to the next round. Our next challenge was to conduct an energy audit on NITT campus for over 800 acres and submit the report along with various recommendations made to reduce non-renewable energy resources in our campus. Finally we were selected amongst the top 14 teams from all over India to present our Energy audit report along with a business plan to implement the recommendations made by us to Schneider-Electric, Bangalore. The finale took place at RVCE, Bangalore and was to be judged by a panel of seven proficient people from Schneider-electric. Each group was allotted a time of ten minutes to present their report and another ten minutes for Q and A round. It was a great experience and a good exposure where we were competing with other colleges all over India and learnt the know-how of several green ideas to conserve energy. Finally, all our teamwork and dedication ended with the Best white paper award to our group "Watt the Vibration".

Special thanks to Dr. P. Raja for helping us with the report and Estate Maintenance division of NITT.

TEXAS INSTRUMENTS ANALOG DESIGN CONTEST 2012-13:



Team Members: Kowshick B Dinesh P Ramesh K Govindarajan Pankaj Raghav P
Mentor: Dr. G. Saravana Ilango

The power crisis has deteriorated over the years. The power cuts in many cities necessitate the use of an inverter in every house. The main idea behind power cuts is to reduce the power usage but the use of an inverter contradicts this purpose. To deliver 1 unit of power an inverter consumes more than 1 unit of power. Thus, we consume more power and pay extra.

The objective of our project is to charge the battery using power from PV panels and manage the power flow efficiently. This reduces the power consumed from the grid besides ensuring an effective payback period.

A PV system involves two power sources (PV and utility), a power sink (load) and a power source/sink (battery). The PV source is connected to the battery via a charge controller. The battery and the utility mains supply are connected to the inverter which transfers power to the load. Hence a Power flow Management system (PMS) is required to balance the power flow among these sources.

While commercially available solar chargers work until a battery is fully charged, our work focuses on maximizing the usage of solar power. A power flow control strategy directs the excess power to the loads. Another objective is to implement a subsystem that will not involve any modifications in the existing Inverter circuitry (plug and play system) for easy installation.

The system design also ensures modularity where one charge controller is installed for each PV panel. Thus, power extraction from PV panels are independent of each other and in case of a fault, they can be removed without affecting the functioning of the complete system. Hence, the system is easy to maintain and users can add PV panels as per their requirement. We submitted this project for the Texas Instruments Analog Design Contest 2012 and were awarded the Tom Engibous award (the first prize) for our innovative and effective design. The journey from start till victory was intense and memorable experience. We hope to launch this project commercially to limit the power consumption at the basic level.

TEXAS INSTRUMENTS ANALOG DESIGN CONTEST 2012-13:



Team Members: Vivekanandan B Kishore P Sethu Chidambaram Manikandan Ananth
Mentor: Dr. N Ammasai Gounden

Our project titled 'Solar Based Hybrid Electric Powered Wheelchair' won the consolation prize in the Texas Instruments Analog Design contest. The motivation behind the project was to develop a technology that would provide differently abled people independence in their lifestyle. The project idea was inspired from a solar powered wheelchair built by a polio affected person in Saudi Arabia. The basic system had a battery charged from solar power via a power converter that powered two joystick controlled motors. The hardware was designed purely with analog components keeping cost effectiveness and simplicity as the two main objectives. The ability to charge the battery from utility AC supply was also incorporated.

The four feet high mechanical chassis was designed and built entirely by our team. The PV (Photovoltaic) panel was mounted on top of the chassis and the system hardware fixed on the wooden base. The power converter employed was a SEPIC converter that is capable of both buck and boost operation. Since the PV panels had to be charged during motion, an innovative algorithm capable of tracking maximum power point during continuous motion was used to charge the battery. The wheelchair's motion was controlled using differential drive. To make the system robust, suitable analog protection systems were also provided to make the final product complete in all aspects.

The competition taught us the value of managing time and resources. Team work and ability to multi-task were tested intensely during the project. The first two phases were evaluated based on a report and a video detailing our project. We cleared these rounds with our first phase video listed among the top 25 videos.

The final round of TIADC was held in Bangalore. We put up our project/model for display and a presentation was made before a judge. Our shining moment was showing a demo to the then MD of TI India, Dr. Bishwadeep Mithra, who also awarded us the consolation prize along with our mentor Dr. Ammasai Gounden who was a pillar of support throughout the project.

The experience right from the submission of the abstract to becoming one of the four finalists was an upward learning curve. We began with just ideas, but this competition pushed us forward to materialise those ideas into developing a successful product.

FIRST TECH CHALLENGE AT CATERPILLAR ELECTRONICS



First Tech Challenge is an inter-college robotics competition conducted by Caterpillar Electronics, India. The competition is inspired by an internationally famous completion 'Ring it Up'. It is a two year old initiative by the company which aims at encouraging students to come up with innovative ideas in the field of robotics. The competition was held at Caterpillar Inc, Chennai on March 30 2013. 8 teams from five colleges namely NIT Trichy, College of Engineering Guindy, Madras Institute of Technology, PSG college of engineering and technology, Coimbatore and St. Xaviers college, Kanyakumari participated in the event. The competition was announced by November 2012 and 20 students were shortlisted by the company by the end of December and were split into two teams. The components were shipped to the college by mid-January 2013 and the bots were completed by the two teams by the last week of March. The competition was held in Chennai. The students were provided necessary accommodation for the duration of the competition.

During any match, a team had to pair up with a team from another college and face two other teams. Each team thus played three matches in a league format and the top four teams overall were granted a spot in the final. The competition was streamed live over the Caterpillar network across the world.

There were three awards provided at the end of the events:-

1. Innovate award was awarded to the team with the most innovative robot design. This was decided on the basis of an interview conducted by a panel of experts.

2. Inspire award was awarded to the team with the maximum number of aggregate points obtained at the end of the finals.

3. Motivate award was awarded to the team based on their ability to interact within their own team and with their allies.

NITT Team-A won the Innovate and Inspire awards. At the end of the presentation ceremony, all students were taken for a campus walk where they were briefed about the products, services and research activities of Caterpillar. Overall, it was a very pleasant experience for all the students who participated in the event.

NITT Team A Members:

Arjun Prasath M (EEE) Suriya Narayanan L (EEE) Sachin P Santosh (EEE) Valliappan M (EEE)
Aravind S (EEE) Raja Kumar (ICE) Navaneet Gokul M (EEE) Vignesh Sushruta R (ICE)
Sriram Steve (ICE) Govinda Pandey (Mech)

Guide:

Dr. G Saravana Ilango (EEE)

SANGAM 2013 - PRAGYAN, NIT TRICHY



The exponential increase in fuel prices made us contemplate an efficient way to minimize fuel consumption in vehicles. After researching through case studies, we came to the conclusion that the air conditioning system in a vehicle consumes a substantially large amount of fuel.

In view of this fact, Haiger India Air Conditioning Pvt. Ltd., along with its Chinese partner, presented its new range of AC-DC air-conditioners for 7 to 11 m buses at the recently held 'Busworld India' exhibition in Mumbai. Haiger proposed to run the Air Conditioning system from the 24V bus battery instead of coupling the AC compressor to the engine. The modification ensured the refrigeration cycle was faster and the fuel efficiency was significantly improved.

However, this requires the size of the alternator that charges the bus battery to be increased considerably. We sought to overcome this setback by using solar panels to augment the power supplied to the battery.

The roof of the bus is a suitable for a PV system. The need for an extra battery to store the solar energy is eliminated as the existing bus battery can be used for this purpose. In addition, we also reflected upon the fact that maximum power demand from the air conditioning system would be during midday at which time the amount of solar power produced by the panels would be maximum as well.

With two weeks to go before Pragyan, we began creating a prototype of the proposed model. Our mentor, Dr.G.Saravana Ilango and research scholars of our department helped us with great alacrity. In spite of facing considerable setbacks in the process, our persistent efforts paid dividends as our model was ready for display on the day of the Sangam competition.

During the two days of this exhibition, we enjoyed explaining our prototype to the audience. The judge was very impressed with the effort we had put into this project. We were honored to receive the first prize from our Director. It was a gratifying experience.

Team Members:

Sandeep Nital David Arjun Prasath M
Suriya Narayanan L Sachin P Santosh

Mentor:

Dr. G. Saravana Ilango

ANVESHAN 2012 - STUDENT PROJECT DESIGN FELLOWSHIP



Team Members: Harini Muthukrishnan Kotha Praneetha Deepak Krishnan
Mentor: Dr. N Ammasai Gounden

Design Contests are great tools to explore and engineer as such contests give an opportunity to showcase one's innovation, product design and problem solving abilities while being mentored by experienced industry veterans. Analog Devices, Inc., the global leader in high-performance semiconductors for signal-processing applications announced a Student Design Project Fellowship, Anveshan 2012. Anveshan, a system design fellowship was initiated in the year 2010 in order to encourage and enhance system level engineering expertise among engineering students. This edition of the fellowship saw over 180 registrations from over 100 engineering universities and colleges across India.

Being always fascinated by electronics used for medical applications, we decided to develop a low cost health monitor. After initial literature survey and after discussions with our mentor Prof N Ammasai Gounden, we zeroed on Pulse oximetry and spirometry as the functions of our health monitor.

After two rounds of screening several design proposals including viva sessions with selected teams, our team was shortlisted for the finale. All the teams were assigned two mentors from Analog Devices in addition to a faculty guide from their respective colleges. Analog Devices funded and supported the 10 finalists with all necessary components, kits and boards that were necessary to realize the system. A mid-project evaluation was conducted in January, where the competing teams presented their projects to an Analog Devices panel for feedback and course correction. We then presented our complete systems for final evaluation. Our projects were assessed by the judging panel through a stringent question and answer session with the teams along with live demonstration of the designed system. Our team bagged the first prize and we received a cash prize of Rs 1,65,000.

We were informed that the winners were chosen based on parameters such as innovative concept & implementation, performance & design, novelty of application, testing strategy, performance of design and presentation & team work. The constant inspiration provided by our faculty guide and the feedbacks we obtained during the project reviews helped us gauge ourselves and finish the project in time for the contest deadline. Working for the fellowship has been a profound learning experience for all of us. Our journey from surveying literature to building the entire system has been magnificent. Presenting our final prototype and receiving the panel's feedback was an exhilarating experience for the team.

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"I have not failed. I've just found 10,000 ways that won't work."
-Thomas A. Edison