COVER STORY

POWER GERNERATION
IN CAMPUS

TRONICALS

VOLUME 3 | ISSUE 2

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY

CONTENTS

MESSAGE FROM

THE HOD

I am happy to learn that the department of Electrical and Electronics Engineering is bringing out its bi-annual magazine TRONICALS for the year 2017 - 2018. The magazine helps to record the technical journey of the association over the year and provide an opportunity to the students to showcase their talent and explore their creative potential. The efforts taken to bring about innovative content is appreciable. The release of this spectacular issue of the magazine has added value to the constant effort of the students. Through this message, I wish them "All the very Best" for their future endeavors to and hope the students of EEEA bring more laurels to the college on the whole.

Dr. S. Sudha

MESSAGE FROM

THE FACULTY ADVISOR

With unstinted efforts of all the members of the editorial board, this newsletter also provides a wide coverage of the various curricular, co-curricular and extra-curricular activities of our department. I express my sincere thanks to everyone who has in one way or another contributed to the success of the preparation of this newsletter. At this juncture, I would like to record in place the visit of Dr. Peter Palensky, Professor for intelligent electric power grids at TU Delft, Netherlands and Dr. Subhashish Bhattacharya, ABB Term Professor, Department of ECE at NC State University to NIT, Tiruchirappalli during November-December, 2017 for conducting the Global initiative of Academic Networks (GIAN) courses organised by our department faculty members. Apart from this, Dr. James M. Conrad, Professor and Associate Chair Dept. of Electrical and Computer Engineering, University of North Carolina Charlotte, USA has also visited our department during January 2018 and interacted with the faculty members, research scholars and students for possible collaborative initiatives between the two institutes. I am happy that the Electrical and Electronics Engineering association (EEEA) has meticulously planned for conducting the national level technical symposium called CURRENTS 2018. On behalf of the faculty, staff and students and on my own behalf, I wish that CURRENTS 2018 becomes a memorable one.

- **Dr. N. Kumaresan**

EDITORIAL

On behalf of the last batch to not have flexible curriculum, I can safely say that the transition from being a first year to becoming a second year is probably the most significant one. A major aspect of that transition is integration with the department. A student's primary identity in college is the department they belong to. As students integrate with their department, they realise their identity. When I was in the middle of that process, I started working for Tronicals.

The batch of 2016 inherited the EEE-A Newsletter and renamed it to Tronicals. The etymology isn't hard to decipher. Tronicals is basically the culmination of electronics and electricals, coined in a manner that it rhymes with 'chronicles'. Quite evidently, it was a sign of taking the newsletter forward from being just a newsletter. I was a part of the group that gave a new identity to EEE-A's newsletter, when I was realising my own identity. As you sow, so you reap. Even if it's an identity.

The goal since then has been to establish Tronicals as the official newsletter-cum-magazine of EEE department, and to make it a household name among not only the students of the department, but also those of the campus as a whole. It's with pleasure I declare that Tronicals has become the establishment that it was intended to be, capping off the three brilliant years I have spent working for and contributing to it.

Like every other edition, Tronicals Volume 3 Issue 2 is versatile and has a lot to offer. Hope you have fun reading it.

Keshore Suryanarayanan
Chief Editor
Batch of 2014-18

TRONICALS TEAM

AWARDS AND JOURNALS

AWARDS RECEIVED

- P. Padmagirisan received the Best Paper Award for the paper entitled "Control of a Solar Powered Single Stage Induction Heating System", P. Padmagirisan, V. Sankaranarayanan and A. Joseph Godfrey, presented at National Conference on "Hybrid AC/DC Power Systems for Effective Utilization of Renewable Energy" held at NIT Tiruchirappalli on November 24-25, 2017.

- Suresh N.S. received the Best Paper Award for the paper titled "Comparison of various Control Strategies for Distributed Inverters Tied to a Micro-Grid", N. S. Suresh, and S Arul Daniel, presented at Thirty-third National Convention of Electrical Engineers 2017 (NCEE 2017), and National Conference on "Hybrid AC/DC Power Systems for Effective Utilization of Renewable Energy" held on 24th – 25th November 2017, organised by The Institution of Engineers (India), Tiruchirappalli Local Centre and NIT Tiruchirappalli.

- Nindra Sekhar and P.Lakshmana Rao won the Best Paper Award for the paper titled "Experimental Investigation on Operation of Stand-alone Wind-driven DFIG-Solar PV System", Nindra Sekhar, P. Lakshmana Rao, N. Kumaresan and M.P. Selvan, in NCEE-2017 held on 24th – 25th November 2017, organised by The Institution of Engineers (India), Tiruchirappalli Local Centre and NIT Tiruchirappalli.

WORKSHOPS CONDUCTED

- Organized Faculty development programme on "TRAINING TOMORROW'S TEACHER - Teaching Through Technology", Under the Self-Financed Category, during 20th – 24th November 2017 jointly with Department of Management Studies and Department of EEE. Programme Coordinators : Dr. N. Thamaraiselvan, Associate Professor, DoMS, Dr. B. Senthil Arasu, Associate Professor & Head DoMS, Dr. N. Kumaresan, Associate Professor, EEE and Dr. J. Daniel Inbaraj, DoMS

- Suresh N.S. volunteered and helped in conducting "Residential Basic Computer Training workshop for the Visually Impaired", held in NIT Trichy from 26th December 2017 to 30th December 2017 conducted by prof R. Gururaj and Dr. A. K. Bakthavatsalam.

NCEE 2017

The EEE department organized Thirty-third National Convention of Electrical Engineers 2017 (NCEE 2017) and National Conference on "Hybrid Ac/DC Power Systems for Effective Utilisation of Renewable Energy" by IEI Tiruchirappalli Local Centre in association with NIT, Tiruchirappalli and BHEL, Tiruchirappalli, during November 24-25, 2017.

VISION AND MISSION OF THE DEPARTMENT

ABOUT:

The Department of Electrical and Electronics Engineering, NIT, Tiruchirappalli was started in the year 1964. It offers one Under-Graduate programme (B.Tech.), two Post-Graduate programmes (M.Tech. in Power Systems and Power Electronics) and also research programmes (M.S. and Ph.D.) in the various fields of Electrical and Electronics Engineering. After the transformation from REC to NIT, the department has grown not only in terms of student and faculty strength, but also in improving the laboratory facilities for the teaching and research purposes. Thus, the department has dedicated and state of the art teaching / research laboratories. The department is recognized for excellence in research (First Department in NIT-T to be accorded QIP status for Ph.D. programme), teaching and service to the profession

The faculty members have strong sense of responsibility to provide the finest possible education for both graduate and undergraduate students. The academic strength of the faculty is reflected by the alumni, many of whom are in the top echelons of industry and academia both in India and abroad.

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.

B.TECH. PROGRAMME

Programme Educational Objectives (PEOs):

The major objectives of the B.Tech. Programme in Electrical and Electronics Engineering are to prepare students:

1. for graduate study in engineering
2. to work in research and development organizations
3. for employment in electrical power industries
4. to acquire job in electronic circuit design and fabrication industries
5. to work in IT and ITES industries.

Programme Outcomes (POs):

The students who have undergone the B.Tech. Programme in Electrical and Electronics Engineering (EEE):

1. will have an ability to apply knowledge of mathematics and science in EEE systems.
2. will have an ability to provide solutions for EEE problems by designing and conducting experiments, interpreting and analysing data, and reporting the results.
3. will have comprehensive understanding of the entire range of electronic devices, analog and digital circuits with added state-of art knowledge on advanced electronic systems.
4. will have knowledge and exposure on different power electronic circuits and drives for industrial applications.
5. will have in-depth knowledge in transmission and distribution systems, power system analysis and protection systems to pursue a career in the power sector.
6. will have a good knowledge in microprocessors/microcontrollers, data structures, computer programming and simulation software.
7. will be able to develop mathematical modelling, analysis and design of control systems and associated instrumentation for EEE.
8. will be able to systematically carry out projects related to EEE.
9. will have an ability to participate as members in various professional bodies as well as multidisciplinary design teams.
10. will demonstrate the ability to choose and apply appropriate resource management techniques so as to optimally utilize the available resources.
11. will be proficient in English language in both verbal and written forms which will enable them to compete globally.
12. will have confidence to apply engineering solutions with professional, ethical and social responsibilities.
13. will be able to excel in their professional endeavours through self-education.
14. will be able to design and build renewable energy systems for developing clean energy and sustainable technologies.

M.TECH IN POWER SYSTEMS

Programme Educational Objectives (PEOs):

The major objectives of the M.Tech. Programme in Power Systems are to equip the students with adequate knowledge and skills in Power Systems Engineering and to prepare them for the following career options:

1. research programmes in Power Systems Engineering
2. employment in power research and development organisations
3. to work in electric power industries and energy sectors
4. faculty positions in reputed institutions.

Programme Outcomes (POs):

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
12. be able to pursue challenging professional endeavours based on acquired competence and knowledge
13. 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
14. be capable of examining critically the outcomes of research and development independently without any external drive.

M.TECH IN POWER ELECTRONICS

Programme Educational Objectives (PEOs):

The major objectives of the M.Tech. Programme in Power Electronics are to equip the students with adequate knowledge and skills in Power Electronics and to prepare them for the following career options:

1. research programmes in Power Electronics and related areas
2. employment in R & D organisations related to sustainable technologies
3. to work in power electronic circuit design and fabrication industries
4. faculty positions in reputed institutions.

Programme Outcomes (POs):

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
5. be able to identify optimal solutions for improvising power conversion and transfer capability, enhancing power quality and reliability through PE based solutions
6. 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
7. be able to work on small, well-defined projects with particular goals to provide real time solutions pertaining to power electronics
8. 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
9. be able to develop dedicated software for analysing and evaluating specific power electronics and control problems
10. 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
11. be able to confidently interact with the industrial experts for providing consultancy
12. be able to pursue challenging professional endeavours based on acquired competence and knowledge
13. 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
14. be capable of examining critically the outcomes of research and development independently without any external drive.

JOURNALS AND CONFERENCE PUBLICATIONS

JOURNAL PUBLICATIONS

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- Mageshwari, S., (2017) Infrastructure of net zero energy homes in India. World Journal of Technology Research and Engineering, 2(1), pp.189-195.

- Mageshwari.S,Kanaga Lakshmi S and Hanumatha Rao,Design and Implementation of Buck-Boost Converter for Residential PV Application.International Journal on Electrical Engineering and Informatics,9(4),2017.

- B. Pradeep Kumar; Saravana Ilango Ganesan ; M. Jaya Bharatha Reddy and Nagamani Chilakapati , " Online Fault Detection and Diagnosis in Photovoltaic Systems Using Wavelet Packets ", IEEE Journal of Photovoltaics , vol.8, no.1, pp. 257-265, 2018.

- M.P. Sruthi, C. Nagamani, G. Saravana Ilango; "An improved algorithm for direct computation of optimal voltage and frequency for induction motors " , Engineering Science and Technology, an International Journal, Elsevier, vol. 20, 2017, pp. 1439-1449.

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- Anilkumar T.T., Sishaj P Simon and Narayana Prasad Padhy, "Residential Electricity Cost Minimization Model through Open Well-Pico Turbine Pumped Storage System" Elsevier publication Applied Energy, Vol. 195, pp. 23-35, 2017.

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- S Sreejith and Sishaj P Simon, "Security Constrained Unit Commitment Incorporating Interline Power Flow Controller", Periodica Polytechnica. Electrical Engineering and Computer Science, Vol. 61, no. 1, pp. 22-33, 2017.

- Venkatraman, K., Selvan, M.P., Moorthi, S., Raja, P. and Deepa Kurup, "Predictive Current Control of DSTATCOM for VAR Compensation of Grid Connected Wind Farms", Journal of Renewable and Sustainable Energy, March 2017, SCI Indexed, ISSN: 1941-7012.

- Venkatraman, K., Moorthi, S., Selvan, M.P. and Raja, P., "A Comprehensive Embedded Solution for Data Acquisition and Communication using FPGA", Journal of Applied Research and Technology, Elsevier, Vol. 15, No. 1, February 2017, pp.45-53, SCImago Indexed ISSN: 1665-6423.

- Vijayapriya, R., Raja, P. and Selvan, M.P.,"Enhanced Method of Rotor Speed and Position Estimation of Permanent Magnet Synchronous Machine based on stator SRF-PLL", Engineering Science and Technology, an International Journal, Elsevier, 2017, In Press, Scopus Indexed ISSN: 2215-0986.

- Jithin K.K, S. Venkata Hareesh, P. Raja and M.P. Selvan "Design and Implementation of an Algorithm for Diagnosis of Load Encroachment in EHV Lines", Energy Procedia, Elsevier, 117(2017), 519-526.

- K. Sujita Kumar Achary and P. Raja "Adaptive design of Distance relay for series compensated transmission line" Energy Procedia, Elsevier, 117(2017), 527-534.

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- N. A. Sundaravaradan, M. Jaya Bharata Reddy and D. K. Mohanta, "How is Earthing done?" IEEE Potentials Magazine, Accepted for publication.

- B. P. Kumar, G. S. Ilango, M. J. B. Reddy and N. Chilakapati, "Online Fault Detection and Diagnosis in Photovoltaic Systems Using Wavelet Packets," in IEEE Journal of Photovoltaics, vol. 8, no. 1, pp. 257-265, Jan. 2018.

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- M. Suman, M. Venkata Kirthiga and S. Arul Daniel, "Hybrid Analyzing Technique for Active Islanding Detection Based on d-Axis Current Injection", IEEE Systems Journal, Accepted for publication.

- Tamil Mani P., M.Suman and M.Venkata Kirthiga, "Coordinated Controller for Demand Side Management", 33rd National Convention of Electrical Engineers, 2017, and National Seminar on Hybrid AC/DC Power Systems for Effective Utilization of Renewable Energy , (IE Convention),November 24-25, 2017 at the National Institute of Technology, Tiruchirappalli.

- Prasannajit Khatua, M.Suman and M.Venkata Kirthiga, "Estimation And Analysis Of Harmonics And Power Factor Correction In A Modern Steel Manufacturing Facility", 33rd National Convention of Electrical Engineers, 2017, and National Seminar on Hybrid AC/DC Power Systems for Effective Utilization of Renewable Energy (IE Convention), November 24-25, 2017 at the National Institute of Technology, Tiruchirappalli.

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- P Srinivasa Rao Nayak, Dharavath Kishan "Performance Analysis of Series/Parallel and Dual Side L-C- C Compensation Topologies of Inductive Power Transfer for EV Battery Charging System" in Frontiers in Energy-Springer(Accepted for Publication).

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- Dr. S. Arul Daniel, Sajal K Paul,Muthvuel P, "Sizing of PV array in a DC nano-grid for isolated households after alteration in time of consumption", Engineering Science and Technology, an International Journal (Elsevier).

CONFERENCE PUBLICATIONS

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- P. Srinivasa Rao Nayak, Kishan Dharavath, Radhakrushna Dey, K. Sundareswaran and Sishaj P Simon "Performance Evaluation of Square Coupled Coils at Different Misalignments for Electric Vehicle Battery Charging" 4th International Conference on Vehicle Technology and Intelligent Transport Systems (VEHITS), Mar 16-18, 2018, Portugal (Accepted for Presentation).

- Mohan Sundar, M.Srividhya and M.Venkata Kirthiga, " Optimal Placement and Sizing of Distributed generators to ensure Protection Coordination", IEEE International Conference INDICON 2017, organized at the IIT Roorkee, between 15th – 17th December, 2017.

- K.Kanimozhi and M.Venkata Kirthiga, "Stability Constrained Optimal Allocation of DGs in Autonomous Micro-grids", IEEE International Conference INDICON 2017, organized at the IIT Roorkee, between 15th – 17th December, 2017.

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- Anmol Dwivedi, Kotni Tirumala Sai Akhil, Nibhanupudi Sai Suprabhath, B. Mallikarjuna, M. Jaya Bharata Reddy and D.K.Mohanta, "Real-Time Implementation of Phasor Measurement Unit Using NI CompactRIO", 2017 IEEE International Conference on Advances in Electrical Technology for Green Energy (ICAETGT'17), 23rd September 2017, Coimbatore, India.

NCEE 2017

- The following were published in NCEE 2017 held on 24-25 November 2017 at NIT-T organised by IEI-TLC, Tiruchirapalli.

- C.M. Jenisha, N. Ammasai Gounden, D. R. Binu Ben Jose and Aiswarya Remesh, "Power Electronic Converter with Improved Switching Strategy for PV Systems", NCEE 2017, 24-25 November 2017,held at NIT-T organised by IEI-TLC, Tiruchirapalli.

- P. Padmagirisan, V. Sankaranarayanan and A. Joseph Godfrey, "Control of a Solar Powered Single Stage Induction Heating System", NCEE 2017, 24-25 November 2017,held at NIT-T organised by IEI-TLC, Tiruchirapalli.

- P. Padmagirisan, V. Sankaranarayanan and A. Joseph Godfrey, "Design of Solar Simulator Using Programmable Power Supply", NCEE 2017, 24-25 November 2017,held at NIT-T organised by IEI-TLC, Tiruchirapalli.

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- Nindra Sekhar, P. Lakshmana Rao, N. Kumaresan and M.P. Selvan, ""Experimental Investigation on Operation of Stand-alone Wind-driven DFIG-Solar PV System", NCEE 2017, 24-25 November 2017,held at NIT-T organised by IEI-TLC, Tiruchirapalli,
pp 182-187.

YOUNG FACULTY FELLOWSHIP

To increase the number of doctorates in the Electronic Design and Manufacturing (ESDM) and IT/IT-enabled Services (ITES) sector and to attract and retain faculty in these areas, the Union ministry of Electronics and Information Technology, Government of India introduced the 'Visvesvaraya Ph.D. Programme', under which 34 Ph.D. fellowships and 6 young faculty fellowships have been awarded to NIT, Trichy.

Out of the six young faculty fellowships, four have been awarded to professors of the EEE department. Dr M.P. Selvan, Dr. G. Saravana Ilango, Dr. S. Moorthi and Dr. Sishaj. P Simon have been awarded the fellowship.

என்.ஐ.டி. பேராசிரியர்கள், முனைவர் பட்ட மாணவர்களுக்கு ஆய்வு நிதி

தினமணி

Fri, 26 January 2018
epaper.dinamani.com/c/25734410

என்.ஐ.டி. பேராசிரியர்கள் 6 பேருக்கு மத்திய அரசு விருது

என்ஐடி பேராசிரியர்களுக்கு விருது

NIT-T awarded 40 fellowships

NIT-T bags good chunk of tech doctoral fellowships

DC CORRESPONDENT
TIRUCHY, JAN 25:

The Union ministry of Electronics and Information Technology, Government of India introduced the 'Visvesvaraya Ph.D. Programme' in order to enhance the number of doctorates in the Electronic Design and Manufacturing (ESDM) and IT/IT-enabled Services (ITES) sector and to attract and retain the faculty in these areas.

Under this scheme, 34 Ph.D. fellowships and six young faculty fellowships have been awarded to NIT-Tiruchy.

An NIT-T release said here that Dr M P Selvan, Dr N Sivakumaran, Dr G. Saravana Ilango, Dr S. Moorthi, Dr Sishaj P Simon and Dr K. Srinivasan have been awarded the young faculty fellowship.

Both the Ph.D. scholars and faculty fellows would receive research grants, enhanced fellowships and travel grant for presentation of papers in international conferences, Prof. (Dr) S.V. Raghavan, chairman, Academic Committee, 'Visvesvaraya Ph.D. Programme' visited the NIT-T for review of the progress of Ph.D. scholars and for interaction with the young faculty awardees during January 18 and 19.

Director NIT-T, Dr Mini Shaji Thomas congratulated the young faculty awardees and assured Prof. Raghavan that the institute would provide all the support to the Ph.D. scholars and the young faculty fellows to achieve excellence in the 'ESDM and ITES' sectors, the release added.

The NIT-T director, Ms Shaji Thomas along with the scholarship winners at Tiruchy campus. – DC

SHORT COURSES

- Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence. Under GIAN, following two courses were organized by our department :

  "Intelligent Electrical Power Grids" during 27th November 2017 to 01st December 2017

  Coordinators : Dr. N. Kumaresan and Dr. M.P. Selvan

  Foreign expert : Dr. Peter Palensky, Professor/Electrical Engineering and Head of Intelligent electric power grids at TU Delft, Netherlands

  "SIC Devices Enabled Power Converters" held from 11th December 2017 to 15th December 2017

  Coordinators: Dr. C. Nagamani and Dr. G. Saravana Ilango

  Foreign expert: Dr. Subhashish Bhattacharya, ABB Term Professor, NC State University and founding faculty member of NSF FREEDM systems center and DOE NNMII Power America

- **A short course on Digital Controllers for Power Applications was conducted on 3rd and 4th November 2017 in association with Entuple Technologies**

  Coordinator: Dr. S. Moorthi and Dr. M.P.Selvan

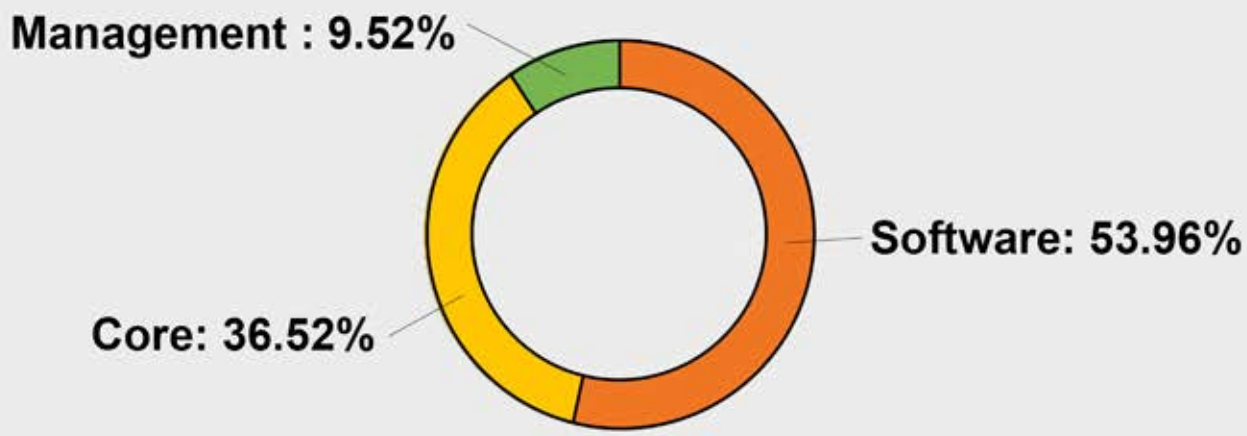
  Industry Expert: Mr. Wikneswaran Pillai, Technical Director, Entuple Technologies

Placement Stats

Internships

Texas Instryment	Shivani J Subhadeep Aich
Qualcomm	Shruthi Ravi Shankar Aravindh Balaji Ritabina Biswas
Nvidia	Harini
Sandisk	Obilisetti Shanmukhi
Visa	Jittam Bhattacharya
Morgan Stanley	Sudharshan St
Citicorp	Nandan Baskar
Samsung	Pritam Pal
P&G	Avinash Padhi
Siemens	Vinitha Palani A Greeshma Alok Kumar Sahoo Venkata Naga Sai Tejaswi
RBS	Ayodhya Mukund

Placements



ENERGY AND US

As prospective electrical engineers we are often too preoccupied with the big picture, that we end up ignoring our immediate vicinity. Whilst we dream about shadowing the lead of others in the realms of alternate energy, it's easy to forget the progress that we have forged. We are the 4th largest producer of wind energy, a testament to the strong domestic energy policies and relentless effort put in a short span of time. Likewise, we have made immense strides in the production, transmission and distribution of electricity. We don't really need to look further than the state of load affairs within our very own campus.

Being the first department that greets you upon entering the campus, you are immediately grasped with the sense of priority our department commands. The ideas and goals shared amongst us are clearly reflected on the rooftops of the department, with the manifestations of solar and wind energy, clear symbols of the ambitions shared by the Electrical Estate. Whilst the weather of Trichy isn't necessarily pleasant, possessing a year-long summer does have it perks.

In that regard, solar panels have been installed on the rooftops of the Lecture Hall Complex to harvest power to the tune of 100 kW. "We have slowly been reducing our need on power provided by the Tamil Nadu Electricity Board. In fact, most of the energy produced is fed back into the grid, as currently the solar power generated is used in times of main supply failure as a backup. In this regard, we are replacing diesel generators with solar panels, a much more cleaner and cheaper alternative. We intend to improve the facilities by utilising recent developments in generation, as well as increasing the capacity to around 2 MW", an enthusiastic Mr. Karthik informs us. "Trichy's unforgiving sun has suddenly become a bit friendlier."

Whilst we take slow but firm steps in unconventional forms of energy, it is necessary to understand the fact that most of our energy demands are met by conventional forms. For a campus of our size, catering to various different types of consumers, to have uninterrupted power is no small feat. NITT serves as one of the major consumers of electricity along with nearby BHEL.

On average we consume a mammoth 2.5-2.8 GW of energy every month. Fed from the main gate to the powerhouse and henceforth into various zones, the logistics behind such a complex system is carefully maintained and documented.

At the EMC, Mr. Nallathambi shared such details regarding current and plans for the future. A total of 10 transformers are distributed across campus; with another to be situated in Opal, currently under construction. The step-down transformers are rated for 1000 kVA, although there exist options to operate at 250, 750 kVA too. There are plans to connect generators directly with the transformers, as opposed to the current state of connecting with the grid. Such changes will help improve our self-sufficiency whilst reducing the burden of non-renewable sources.

Monitoring of the loads is done using both analog and digital means. Supervisory control and data acquisition (SCADA), a control system architecture that uses computers and PLCs to supervise and interface machinery, is also possible. The power factor of the lines is also modifiable through capacitor panels, to ensure lower losses and improved efficiency. This is crucial, as most loads operated are inductive like fans and pumps. This is reflected in the increased maximum demand in the more hotter months.

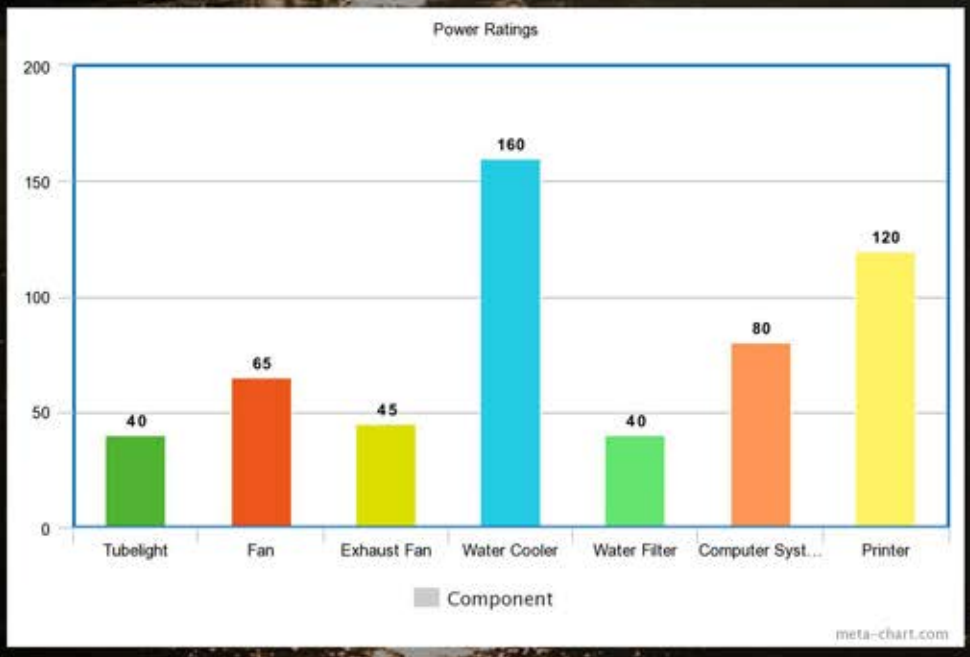
In terms of future plans, the EMC is looking ways to reduce dependency on the TNEB, as well as bringing down costs. The rooftop SPV power plant was one of the ways aimed to achieving this. Several other innovative and new ideas have been touted about answering the issue of efficient and green energy, and are being carefully considered. Students are also encouraged to give their inputs towards this regard, as this is one question that has moved from the blackboard to being all around us.

Power suply in campus

Main gate → Power House → EB → Transformers

Average insolation of solar energy
5.8 kWh/m²/day

LHC Solar facts
- 400 units per day
- ₹1.4 lakh saved per year
- 45,000 L of diesel saved



Automation of Power System through placement of PMU

Generation of electricity and its transmission and distribution has paved the way of modern human era from the day of Adam and Eve. With the development of science and technology, complexity of power system has increased drastically. At the same time, making the power system more reliable and efficient is the primary aim of all developed countries across the world, which they are trying to achieve by automating the grid. Automation is the usage of 'intelligent' devices to finish a task more efficiently in a lesser time, thus eliminating human effort and also reducing human error. Power system automation can be interpreted as automatically collecting information and taking decisions with the help of instrumentation and control devices that involve fast data acquisition, local intelligence along with dynamic supervision and control. Therein lies the importance of highly accurate and time-synchronized Phasor Measurement Units (PMUs) which, in the near future, may replace the usage of traditional SCADA technology. PMUs were introduced in the late 1980s and first deployed in experimental systems in the early 1990s.

An important question which arises is the need for PMUs. In any AC power system, power flows from a higher voltage phase angle to a lower voltage phase angle – the larger the phase angle difference between the source and the sink, the greater the power flow between those points implying larger the static stress being exerted across that interface and closer the proximity to instability. Thus it is extremely important to monitor the phase angle difference.

As per the definition of IEEE, 'PMU' is defined as a device that produces synchronised phasor, frequency and rate of change of frequency (ROCOF) estimates from voltage and current signals. They are time synchronised, high speed measurement units that monitor current and voltage waveforms (sinusoids) in the grid, convert them into a phasor representation through high end computation and securely transmit the same to centralised server. PMUs provide real time synchronised measurements in power system with better than one microsecond synchronisation accuracy, which is obtained by Global Positioning System (GPS) signals. PMUs are situated in power system substations, and provide measurement of time stamped positive sequence voltages and currents of all monitored buses and feeders. Through the use of integral GPS receiver-clocks, PMUs sample synchronously at selected locations throughout the power system. This provides a system-wide snapshot of the electrical system. The GPS not only provides time tagging for all the measurements but also ensures that all phase angle measurements are synchronized to the same time as well.

PMUs work in association with GPS. Analogue inputs derived from the secondary winding of PT & CT are first converted to voltage signals with a typical range of ±10V. The GPS receiver normally generates a one pulse-per second signal to the phase-locked oscillator to lock the phase of the sampling clock. The GPS receiver also creates time stamps for the output of the microprocessor. The microprocessor uses the digital signal from the A/D converter to calculate the quantities required, including the magnitude and phase angle (calculated by the application of Discrete Fourier Transform) of the voltage and current, the measured frequency and the rate of change of frequency. The quantities of different measuring point can be communicated and compared using the time stamps, regardless of any time delay associated with the communication system. There are a number of reasons which make PMUs superior to conventional SCADA systems. Traditional SCADA system is based on steady state power flow analysis, and therefore cannot observe the dynamic characteristics of the power system –PMU is the "MRI of the power system", providing the high sub-second visibility required for observing dynamic behaviour and, therefore, overcoming the limitations of the old "x-ray" quality visibility that traditional SCADA-based systems offer. Phasor technology provides time synchronized sub-second data (typically 20, 30 or 60 samples/second) whereas SCADA passes data once in 4-6 sec.The high data rates and low latency associated with phasor acquisition systems provide the desired agility to respond to abnormal conditions.

PMUs are now assuming a key role in stability prediction, fault detection, protection and fast control of modern electric grids and thus going to fulfil all prerequisites of Power System Automation. High-resolution measurement of voltage and current phasor may offer significant new options for actively managing power systems with diverse resources and growing complexity. Though in current scenario PMUs are positioned mainly on transmission systems, research is going on worldwide to utilize its novelty in case of the distribution network. A plethora of interesting applications in varying states of maturity await further research and development to leverage the opportunities introduced by ultra-high precision PMU measurements in power system.

-Debjyoti Chatterjee

ELECTRIC VEHICLES

Think Electric Vehicles are a contemporary concept? Well, not really. Electric vehicles (EVs) were first seen as early as the 19th century. With the progress made in the field of oil and petroleum industries, however, they slowly decreased in popularity. Fast forward to the 21st century, and we are greeted with the resurgence of EVs.

EVs are generally defined as vehicles which use one or more electric/traction motors for driving the wheels. The power can be obtained from the grid (as in the case of electric trains) or from self-contained sources like on-board solar panels and/or batteries. The traditional gasoline engine is replaced by an electric motor, in EVs. Power delivery to the motor is done using controllers. They have a near noiseless operation, and quicker acceleration. The different pedals have potentiometers attached to them. This sends signals that help the controller communicate with the electric motor.

As of December 2017, there have been over 130,000 EVs sold all over the world. When compared to the measly total of 3500 in 2013, we can see that there has been a sudden spark in this industry. This climb can be attributed to many things.

The most obvious advantage that EVs have, is its eco-friendliness. Emissions and carbon footprints are nearly eliminated due to the lack of combustion of hydrocarbons. This, when paired with the increasingly clean and green power generation systems in many countries, results in EVs being as clean as the generation process itself. The number of moving parts in an EV is a fraction of those in conventional vehicles. This leads to a decreased cost of maintenance in the long run.

The EV industry is still in its early stages. As a result, the availability of charging points/stations is limited in various parts of the world. Another consequence of this infancy, is the high costs of EVs. If due research is not done, a huge amount of money can be potentially spent on less inefficient EVs and the high electricity costs that accompany it. Combine that with the limited range and long recharge times, and we can see why EVs are yet to become mainstream.

As of today, we have more than just a few options of electric cars at our disposal. BMW, Renault, Nissan and Tesla are few of the many manufacturers that produce EVs. Tech giants are diverting a lot of their resources into making these cars as futuristic as possible. Many concept cars and even some consumer vehicles (Tesla's vehicles, basically) pack a huge amount of technological advancement in them.

The scope for EVs in India is pretty sketchy. The worst-case scenario is consumers coming home after work and plugging in at the same time, which also happens to be the grid's demand peak. Regulating this will go a long way in easing the stress placed on the grid. Moreover, oil is almost entirely imported to India, and increasing the use of EVs is only beneficial in the long run.

Once the industry gains traction, and people are increasingly exposed to the possibilities around EVs, we can see an even higher upsurge in their sales numbers. As EEE students, we should have an eye out for the developments in this field and hope India moves towards EVs, sooner rather than later.

THE DAYS LEADING UP TO CURRENTS

Though CURRENTS is scheduled to happen in February 2018, the events began much before, in December 2017. The first event was an online event named Trical Trivia, in which, a reasoning question based on electrical concepts was asked. Participants had to come up with the best possible explanation for the existing phenomenon. This was followed by Object Model Analogy which was also an online event. This tested the creativity of students along with their technical knowledge. Participants had to make use of the everyday objects given in the question to come up with the given logical equation/expression. To acquaint students with the various innovations that happened in the past, the On This Day series was introduced, in which major discoveries or inventions which had taken place on that day were put up online in the form of a poster. Another event was Capture Currents, an online photography contest which saw a huge participation. The major pre-CURRENTS event was Code Currents, an online coding event held in association with CodeChef and Navriti Technologies, which, along with cash prizes, had internship opportunities up for grabs. This event saw participation from students abroad too.

An important pre- CURRENTS happening was the screening of the CURRENTS trailer by LA Cinemas and Sona Mina theatres. The trailer was screened alongside the movies till February 15th.

The CURRENTS Outreach event took place on February 4th, 2018 in Coimbatore. A one day workshop on Machine Learning in Power Systems was conducted at S.N.S College of Technology. The event saw a footfall of around 50 and was well received by the participants.

MINING BITCOINS

The day began like any other. On January 3rd 2009, the Bitcoin network came into existence with the release of the first open source bitcoin client. The founder of Bitcoin, acting under the pseudonym Satoshi Nakamoto was the first person to mine bitcoins. On an interesting note, the true identity of Satoshi Nakamoto has not yet been revealed. He has been as diligent as Spider-Man was in keeping his identity a secret. Bitcoin was initially introduced at a measly exchange rate of around $0.008 per coin. Even Nostradamus couldn't have predicted the magnitude of its growth and success then. In less than a decade, Bitcoin has grown exponentially and paved the way for several other new cryptocurrency to bloom. Bitcoin has seen an insane rate of growth in the last decade, even reaching $17000 per coin at one point.
Presently, it hovers steadily around the $10000 per coin range, after a mini crash.

Cryptocurrency is a subset of digital currency. It is a digital asset, functioning as a medium of exchange that uses cryptography to secure its transactions. Cryptocurrencies use decentralised control, as opposed to centralised e-money and central banking systems. Contrary to how corporations and federal governments control the supply of currency, decentralised cryptocurrency is produced by the entire cryptocurrency system collectively, at a predefined rate.

With the cryptocurrencies steadily increasing in value, there has been renewed interest in mining. Mining is the process of authenticating and legitimising cryptocurrency transactions- sort of like being a bank teller. However, mining is an intensive process and requires specialised hardware. Your average processor will not be able to handle it and will most likely fizzle out.

Mining cryptocurrency is, when stripped down to its essentials, basically brute-forcing your computer hardware through a gauntlet of processing challenges, not unlike solving some complex algorithm. Bitcoin uses the hashcash proof-of-work function, which when processed yields a hash value that validates your processing and rewards you with cryptocurrency, thereby also unlocking the next batch of Bitcoin to be available for mining. This particular function and its design have their own conditions for optimal results, but consumer hardware of all kinds are used regardless. To put this in broad stroke :

CPUs

CPUs (Central Processing Units) were used for mining in the earlier days, when mining traffic was low and the processing power to obtain Bitcoin was very easily achievable, which isn't the case now, because of Bitcoin's intrinsic algorithm that restricts the amount of bitcoin available for mining and increases hash function complexity, based on the amount of previously mined Bitcoin. This unfortunate inverse relationship means that the amount of Bitcoin mined is far outweighed by the requirements to power and run the CPU.

GPUs

GPUs (Graphics Processing Units) are now the most popular hardware choice for mining, much to the dismay of non-miner consumers, because the demand for powerful GPUs has led to outrageous pricing in the marketplace. GPUs are by design better suited for iterative tasks like mining, because of their architecture that enables them to handle repetitive tasks such as allocating pixels on the screen for every frame/image and general geometric calculations. CPUs on the other hand are designed to manage and organise tasks as well as act on them, which puts them at a disadvantage when it comes to raw processing power.

ASICs

ASICs (Application-Specific Integrated Circuits) are specialized units of hardware designed and manufactured for the sole purpose of mining (in this scenario). Their specifications are tailored to fit the amount of processing crunch required for clearing a block-chain of Bitcoin, resulting in the most optimized state. Their performance is so competitive that they manage to make certain GPU-based mining setups obsolete. The marketplace is oversaturated with ASICs though, thus bringing balance to the hardware options for miners.

With Bitcoin exposure reaching the mainstream media and the amount of Bitcoin available for mining drastically declining, miners are coming up with many unique methods to combat their rigs' rising power consumption and the low return investment that Bitcoin has become.

- Specialized software for micromanaging the requirements of a mining rig have been gaining traction recently, and a whole thriving micro-economy has emerged from it.
- Cloud mining is now a budding business venture, with multiple startups offering contracts based on the rig that you want to rent and the period of active mining. This has created a unique ecosystem, where the hardware quantity gets restricted, and both startup and consumer get their requirements satisfied.
- Mining pools are also prevalent, with a group of users coalescing into a network and scheduling mine shifts among themselves to boost both their probability of happening upon a new block-chain and also reduces overall power consumption, with the Bitcoin mined to be shared equally.

To end on a word of caution, now may not exactly be the right time to try and keep up with the Joneses. Cryptocurrency is particularly volatile presently. For individual miners, the return on investment is not really tempting at the moment. Recently, all major cryptocurrencies suffered a minor crash, falling by almost 20% in value overnight. There are many who believe that cryptocurrency has peaked already. However this hasn't deterred enthusiasts from mining rapidly, leading to a steep inflation in the prices of GPUs and graphic cards as more and more miners are buying them. Tech giant, Nvidia, has publicly spoken out against this incessant buying, reiterating the fact that the needs of the gaming community far outweigh the needs of crypto miners. The two biggest names in the industry, Nvidia and AMD have also started manufacturing GPUs specifically for miners; these niche GPUs are powerful enough to handle the rigor of mining but cannot be used for gaming as they do not have the capability to support the video functions that gaming requires.

Industrial Visit

A chance to refresh one's mind before the crucial end semesters is always appreciated by all. So one offered by the department itself, was sure to be grabbed with both arms held wide. With the breeze of the campus lingering behind, the second year students of the department were given a chance to gain a physical interpretation of the course material.

On the 2nd day of November, 2018, under the watchful eyes of Dr. P. Raja and Dr. S. Moorthi, the students headed towards Kirloskar Electric Company Ltd. After a few hours of travel to nearby Dindigul, the batch was affronted with a plant manufacturing the crux of discussion in electrical machines, the stator. It was pleasing to see the blackboard slowly mould into shape, as concepts new and old were reiterated, with an extra aura emanating from the plant. After satisfying the curious students with explanations and demonstrations, the group was led to a transformer plant, bequeath rustic surroundings.

The different tiers involved in the enterprise were discussed. From designing to repairing, all the facets of practical transformers were highlighted and detailed. The consensus agreed having industrial visits tends to improve insight into the subject, as various pragmatic solutions are forged to deal with real-life practicalities, which are usually less prominent with theoretical dispositions.

Overall, the IV helped gel together students further with their course, acquainting future engineers with their home environments.

Tidings from the Tech World.

The Largest (and The Fastest) Battery Backup in the World

For some time now, South Australia has been facing an energy crisis due to which there have been numerous blackouts. In March 2017, Tesla founder Elon Musk made a bet with the co-founder of Atlassian on Twitter. He said that he would be able to install the largest lithium-ion battery in the world in Australia within 100 days, failing which, he would supply it for free. Tesla signed the contract on September 29, the date from which the 100-day clock started ticking. The battery backup, however, was ready by November 23, around 40 days before the deadline. In early December, the battery was installed and is attached to the 325 MW Hornsdale wind farm owned by Neoen, a French company. The battery bank rated at 100 MW/129 MWh can power around 30,000 homes for an hour. Not only is the battery the largest in the world, it is extremely fast too. In late December 2017, when a coal fired power plant in Victoria tripped, the Tesla battery backup was put to test for the first time. The results shocked the national operators. The battery was able to supply 100 MW into the grid in just 140 milliseconds, which is a short time in comparison to the 30 minutes the Torrens Island power station would take to supply to the grid.

Negative Electricity Prices in Germany

Switching to renewable energy sources has proved to be advantageous for the people of Germany. During Christmas in 2017, the electricity prices dropped below zero i.e consumers were paid to use power. This peculiarity was the result of supply exceeding demand due to strong breezes leading to abundant wind power. Although negative pricing has been seen in many European countries, it is more prevalent in Germany. The negative prices, however, do not mean that individual consumers receive money for usage. Taking into account taxes and fees to finance investments on renewable energy, there is a positive bill, which is lesser than before. Though it seems to be a good situation, in reality it isn't. Renewable energy generation is increasing by the hour, and with it, better storage facilities should be made available. Proper forecasting of loads can help divert excess energy to areas is dire need. Till then, negative pricing will continue to be the trend.

EEEA Inauguration 2018

The Electrical and Electronics Engineering Association (EEEA) of NIT Trichy was inaugurated for the year 2017-2018 on 11th September,2017. Mr. Rajbarath K. R., TAS Officer at Tata Services Ltd. and an alumnus of the EEE Department of NIT Trichy,batch of 2013, was the chief guest for the evening. The event started at 3:30 pm with a prayer followed by the lighting of the lamp by the esteemed panel. The Head of Department, Dr. K. Sundareswaran welcomed the gathering and spoke about how much the association had grown since its inception. Following the welcome address, the faculty advisor of EEEA, Dr. N. Kumaresan, introduced the office bearers and executive members of EEEA, following which, a group picture was taken.

The Overall Coordinator of EEEA, Mr. Sarath Sankar announced the agenda for the year 2017-2018. It consisted of a vast variety of activities including workshops and guest lectures. He also added that the association would be making a donation of INR 10,000 to the Malarchi Ashram, which is a home for mentally challenged children.He then stressed on the main activity of the EEEA, 'CURRENTS', which is the national level technical symposium of the EEE Department of NIT Trichy. This was followed by the introduction of the chief guest, Mr. Rajbarath K. R. by the Treasurer of EEEA, Mr. Nanda Kishore V.

The Inaugural Address was then delivered by the Director of the Institute, Dr. Mini Shaji Thomas, who spoke about the need for global exposure to place our institute on a higher pedestal. She also encouraged students to come up with innovative and environment-friendly ideas to better the lives of others.

This was followed by the release of the third issue of TRONICALS which was previously known as The 'EEE Newsletter'. The Presidential Address was delivered by Mr. Rajbarath K .R. who, incidentally, was the Chairman of the EEEA in his time. He reminisced about his days as a member of the association and how their batch was the first to start donating to the Malarchi Ashram. He appreciated the work the association was doing and spoke about how the department had helped him realise his potential.This was followed by the vote of thanks by the Chairman, Mr. Ruthrash Hari. The inauguration ceremony concluded with the national anthem, following which, there was an interactive session with the chief guest in which he addressed the queries students had about pursuing MBA after B.Tech.

DAAN UTSAV

Every year, all over India, a week in October (usually October 2 to 8) is celebrated as Daan Utsav (formerly known as the Joy of Giving week). This initiative was launched in 2009.This year, the Social Responsibility team of the EEE Association worked alongside other social responsibility teams of NITT under the banner of HumaNITTy, and participated in the following events:

1) Visit to the Renaissance/ Malarchi Ashram:

Malarchi Ashram is a rural ashram set up for the welfare of differently abled children. EEE-Association made a contribution of ₹10,000 for the welfare and progress of the residents of the ashram. The members of EEE-A spent a fun-filled day with the children; dancing and entertaining them.

2) Visit to the Loopra blind home

The members visited the Loopra blind home and distributed groceries and other commodities (which were purchased with help from sponsors) to the inmates.

3) Gala for Kids

Every year, on a Sunday during the Daan Utsav, a day of fun and frolic is organised for underprivileged kids. This year too, children from in and around Trichy were invited for the event. Around 400 children came as guests to the Barn Hall. Members of various social responsibility teams worked together to conduct various competitions for the children. Towards the end, prizes were distributed. It was indeed a day of joy for the kids as well as volunteers.

AUTONOMOUS MOBILE ROBOT WORKSHOP

An Autonomous Mobile Robot Workshop was conducted from October 3 to 5, 2017, exclusively for first year students, by the Workshops team of the EEE Association. The aim of the workshop was to build an Autonomous Obstacle Avoiding Robot. Around thirty teams of three participated. The participants were taught the basics of ultrasonics, electronics and microcontrollers. Basic aspects of bot making was also covered. A hands-on session, in which a basic circuit of a Proximity Sensor was built, ensured that the students gained practical knowledge along with theoretical understanding.

GUEST LECTURE

Due to the efforts of Dr S. Moorthi, a guest lecture on Embedded Systems was held on January 8, 2018. The speaker was Dr. James. M. Conrad, Professor and Associate Chair at the Department of Electrical and Computer Engineering, University of North Carolina. He spoke about the applications of Embedded Systems across various fields. He also guided students on what needs to be done for a career in Embedded Systems. The session proved to be fun and informative.

SPARK

Spark is the series of events organised by the social responsibility team of EEEA in collaboration with other NGOs and social organisations. Spark has had three phases.The first phase happened in collaboration with the NGO 'Illuminate' on January 20, 2018. A team of 20 volunteers reached out to middle school children at St Joseph School in Ayyampati, and engaged them in basic science experiments and explained the concepts behind them along with possible applications in real life. Spark Phase 2 took place on January 27th in association with Apekshaa, the social service club of NITT. Basics of electronics and a few basic chemistry experiments were taught to about 76 girls of Std. 9 at Infant Jesus Girls Higher Secondary School, Anna Valaivu. The aim was to give them a peek into STEM and inculcate passion for scientific thinking and reasoning. The third phase was in association with Bhumi, an NGO on February 4th. As a part of National Volunteering Week, a road safety awareness campaign was held at Thennur 4 Road. The volunteers, with the help of placards, explained the importance of road safety to common people.


EEE ASSOCIATION INAUGURATION


EEEA'17
INAUGURATION

ALUMNI INTERVIEW

Everyday, we come across a multitude of stories of alumni who continued on a single path and became experts in their field. What we hear less often are the tales of people who took the road less travelled.To bring into light a few such people, Team Tronicals interviewed two alumni who decided to pursue courses which are rarely chosen by Electrical and Electronics Engineering graduates.

SRIPATI SRIDHAR

Batch of 2017

Currently pursuing Masters in Music Technology from New York University

Can you tell us a little about yourself?

I'm Sripathi Sridhar, musician and lover of technology. I love listening to music, discovering new things and watching documentaries.

What motivated you to pursue a degree in Music Technology?

I have been in love with music for as long as I know. Midway through my undergraduate program, I realized that I wanted to fuse my lifelong interest with my newly acquired skills. That's about when I stumbled across Music Technology, which seemed like a great way for me to get in touch with both my artistic and technical sides and fuse them together.

Is it related to EEE in any way?

Well, Music Technology is a multidisciplinary field. So, the short answer is yes, while the long answer is that it depends on what aspect of Music Technology is being discussed. I have found that EEE is relevant in most branches of the field, in some cases more than others. Certain disciplines of Music Technology such as signal processing or microphone/speaker design rely heavily on EEE concepts, whereas other domains such as algorithmic composition may do so to a lesser extent. Nevertheless, any electronics knowledge is always useful in Music Technology, which is after all, a technical field.

How has your experience in the department been?

Honestly, it was a time for me explore myself and understand my career direction better. I took some classes which really inspired me, while others convinced me of my disinterest in a certain subject. I would say that everything I gained from interacting with the students and faculty at the department, and the university in the general, have really shaped my outlook towards life for which I am ever grateful.

What all extra-curricular activities were you involved in in college?

I was primarily involved in music during my time in NIT Trichy. I was an active member for most of my college life, excluding first semester. Through many competitions, practice sessions and most of all the many talented musicians that were a part of MT, I grew as a musician and as a person. Perhaps some of my fondest memories of NIT Trichy are related to Waterlemons, an experimental rock band that I was a part of for a few years. It was my first band experience where we wrote original music and participated in various music competitions.

I also spent two years working for the marketing team of Festember, and some time working for Currents in my final year. The marketing experience I gained from Festember, and later while leading a team for Currents, was a transformational experience in that it allowed me to gain a better perspective of how companies function, and how difficult it is to manage events in a

A lot of students have doubts when it comes to choosing their path after B.Tech. Do you have any words for them?
The best part about NIT Trichy, and perhaps especially so for EEE, is that you have the opportunity to discover yourself. Invest time in understanding yourself better, and don't be afraid to experiment with ideas and projects of any nature. The resources available here can be a great launchpad if you make the best of them. Moreover, invest time in making connections! NIT students are a talented bunch, and will be a great resource for you in your career. I was pleasantly surprised to find many NIT alumni doing so well in different parts of the world, and they are a prime example of what is possible as a student of this institution. Good luck!

KOUSHIK T

Batch of 2017

Currently pursuing PG Diploma in Cinema at Satyajit Ray Film and Television Institute, Kolkata

Please tell us more about the course you are pursuing.

I'm doing PG Diploma in Cinema with specialization in Direction and Screenplay at Satyajit Ray Film and Television Institute, Kolkata. Based on the small experience I have had there, the course focuses on making you a filmmaker and also a professional technician. It's mostly making a lot of videos under different names.

What was your motivation behind taking up the course?

Well, I wanted to know what the 'mind' is of a filmmaker and what such a mind undergoes in the process of making a film. I wanted to get exposed to the factors that aid in the filmmaking process. SRFTI gives the environment with such factors.

How did NITT help you in moving towards your goal?

NITT gave me space and time. I got a peer group that worked towards the same goal as myself. It gave me a culturally diverse environment. It gave great support for extra activities like competitions and such. It gave me great professors who guided me towards what I want and also made me understand what to take from my four years at NITT. NITT gave me all these and gave have a form and structure to my goals.

How were your days in college? Was it all work?

My days in college was making sure I pass in exams with enough attendance. It also was filled with roaming around campus making films with no idea what I'm going to do after finishing college. It was like the strange nostalgic feel you get during the sunset: missing the day that is ending, darkness ahead yet hoping for another bright day. In my case, I did end up in another new chapter in my life I guess.

Any advice for the juniors?

If you have a passion follow it with all force. But never ever refuse / ignore what NITT is offering you (academically). I'm now learning Control system and Digital electronics for my studies here at a film school! You never know what will help you where; I made the mistake of ignoring what NITT offered me. Don't do that. Take in what NITT is offering. It's something hard and takes a lot of effort and time to get outside.

TIME OUT!

PUNS

1. How did the two magnetic fluxes celebrate their strength?
By giving a high Φ.

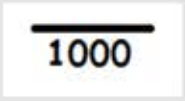
2. Which letter of the English alphabet causes trauma to flip-flops?
H, because flip-flops are H-triggered.

3. Why couldn't the capacitor be confined in the hospital?
It kept getting discharged.

4. Why was the ac-dc converter in a pathetic condition?
It was a wreck-tifier.

5. Which phenomenon in Electrical Engineering exemplifies an oxymoron?
For-anti effect.

REBUS



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