

ISSUE #2

NEWSLETTER



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Editor's Note

It is with great pride, we present you the second edition of ICEA's Newsletter. The ICEA kick started the activities with inauguration in the last week of September in the presence of eminent personalities. The event report is documented in this edition. ICEA's vision was to stand out from others with varied activities benefiting students all around the year. In short span of three months we were able to make an impact on the student community & was applauded with rich accolades from faculty. We have bought down a well-known professor who was pro-active in the nation mission for education, for delivering the much applauded guest lecture. The success of the guest lecture instilled huge confidence in us & motivated us to organize many more. A brief report of the guest lecture on "Virtual Labs" is included in this edition. ICEA then moved out to fulfilling its mission, reaching out to the student community of the department in a composed & informal way. To boost up the morale of the students & increase the confidence levels of the students who want to move right on to jobs after B.Tech, we came up with an innovative initiative "Interns Speak". This brainchild of ICEA was aimed at mingling seniors with prior industry experience & those seniors who secured internships on-campus with juniors in a bid to clear their doubts on varying topics & give them an inside sneak-peak of what lies ahead for them. This initiative was met with overwhelming positive response & we plan to extend this on a much wider platform in a big scale to make direct impact on all students of ICE. A brief report on "Interns Speak" is included.

Apart from those, the regular activities of ICEA organized included workshops on MATLAB, LABVIEW etc. which were conducted on priority basis for all the students. Brief reports are included. Updates on latest technologies are included in this edition to quench the thirst of knowledge. The coming months are extremely important for ICEA as it involves the national level mega department symposium "Sensors". The ICEA is ready for that & will thrive to achieve the daunting task of taking "Sensors-14" a step higher than its previous editions. A preview of "Sensors" is included in this newsletter. We are satisfied with the progress till date but limiting ourselves to certain things undermines the capabilities of the ever-energetic students of ICE Department. Therefore we will take forward the activities with renewed energy in this New Year & aim to set a benchmark. ICEA takes this opportunity to thank all the students of ICE, who helped them in all the activities & patronized the events till now & we ask for your co-operation to continue in the future as well. In the same breath we request the continued support of our wonderful faculty to take forward our activities.

I end this note with a positive attitude nostalgic with our previous activities & hope that ICEA will continue to live up-to the expectations with future endeavors. Hope you enjoy reading this edition & we conclude by extending a warm invitation for all of you to "Sensors-14" on behalf of ICE Association.

-Jayanth Parchuri



ICEA INAUGRATION 2013/14

The department of Instrumentation and Control Engineering established in the year 1993, is one of the youngest departments of NIT, Trichy. With a fine blend of renowned as well as dynamic personalities as faculty, while constantly imbuing students with a passion for research, it has churned out countless successful names in the last 20 years. The Instrumentation and Control Engineers' Association (ICEA) kick-started its activities for the academic year 2013-2014 on 24th September, 2013 at the EEE Auditorium.

The Inaugural Ceremony commenced with the lighting of lamp by a group of dignitaries - Our very own Director, Dr. Srinivasan Sundarrajan, The Chief Guest- Mr A Shanmugam (Director of Airworthiness, Southern region, Directorate general of Civil Aviation), Dean Students Welfare, DR G Venkatesa Prabhu, senior professor of the department Prof. M. Umapathy, and Faculty Advisor Prof. Goldin R Bennet.

Gaurav Kumar Singh, Chairman ICEA presented the welcome address and the proposal of activities for the year 2013-2014. The proposed activities included workshops, guest lectures by eminent personalities, and industrial visits. Dr Srinivasan Sundarrajan, the HoD greeted all the dignitaries present on the stage and colleagues and students.

The Inaugural address was delivered by Honorary Dean, Students Welfare, Dr G Venkatesa Prabhu. He stressed upon the significance of Instrumentation and Control in Industries & rising trends in Automation and the plethora of opportunities that lay in store for the students pursuing BTech in ICE. The Inaugural edition of the ICEA Newsletter was also launched on this occasion and a copy was given to each of the dignitaries present.

The Chief Guest was Mr A Shanmugam (Director of Airworthiness, Southern region, Directorate General of Civil Aviation) who had completed his Btech (Electronics) from Madras Institute of technology, MTech (Aircraft Production Technology) from IIT Madras and Production management from IIM Bangalore. He delivered a lecture on Human Factors in Aircraft maintenance, automatic testing facilities for Aircraft engines and Aircraft autopilot design. He also spoke about the emerging trends in Instrumentation and Control Engineering.

This was followed by a Vote of Thanks by T Tamil Selvan, the Overall coordinator and mementos were distributed to the Chief Guest. The Session came to a close with an interaction between the students, council members, the Director and the guests.

Guest Lecture by Professor Kannan Maudgalya



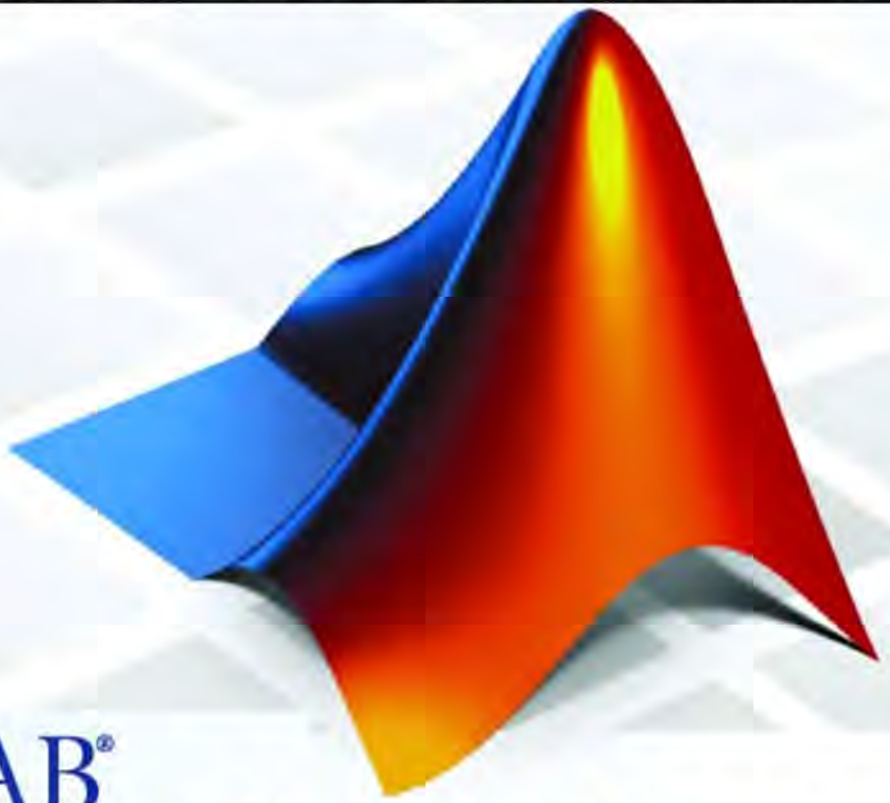
As part of NIT Trichy's Golden Jubilee lecture series, Instrumentation & Control Engineering Association [ICE-A] organized the well-attended guest lecture of Prof. Kannan Maudgalya from Chemical Department of IIT Bombay. Held on 31st October 2013 this guest lecture was on "Virtual Labs", an initiative of Ministry of Human Resource Development (MHRD) under the National Mission on Education through ICT. Started on dot at 2:30 pm in the Civil Department Seminar Hall, this lecture was graced by Honorable Director of Institute Dr.Srinivasan Sundarrajan along with the Head of Department of Instrumentation & Control Engineering Dr.N.SivaKumaran. The Inaugural address was given by the Vice - President of ICEA Jayanth Parchuri, who gave a brief introduction of Prof. Kannan ranging from his B.Tech in Chemical Engineering from IIT Madras to his PhD from Rice University in May 1985. His research publications & his contribution in education through ICT were highlighted as some of his glorious contributions in the field of education. His dedication & efforts on Virtual Labs in imparting low cost education made him a distinct personality in the field of education. Prof. Kannan started his lecture providing an overview of Virtual Labs. Excerpts of his lecture are included here for the readers.

The goal of "Virtual labs" is to provide remote-access to Labs in various disciplines of Science and Engineering. These Virtual Labs would cater to students at the undergraduate level, post graduate level as well as to research scholars. They allow students all over the India to carry out experiments on costliest instruments, from any part of India with internet connectivity. It shares costly equipment and resources, which are otherwise available to a limited number of users due to constraints on time and geographical distances. It also intends to develop a complete Learning Management System where the students can avail the various tools for learning, including additional web-resources, video-lectures, and animated demonstrations. The Project intends to cover physical sciences, chemical science and various branches of engineering like electronics and communications, computer science and engineering, electrical engineering, mechanical engineering, chemical engineering, biotechnology engineering and civil engineering.

Next, Prof. Kannan took the audience to the control of remote equipment's using open source software. He then touched upon SciLab software briefly explaining the basics & the way to use it to integrate control equipment. The highlight of the guest lecture was Prof. Kannan's demonstration of Aakash tablet as an education tool. The audience was left spell-bound with Prof. Kannan's demonstration & the educational uses of Aakash Tablet invoked keen interest in the students who watched & listened with rapt attention. Questions were raised in the Q&A session, which Prof. Kannan patiently answered. Many inquisitive minds were satisfied with the knowledge they received through the guest lecture & gave a hearty applause to Prof. Kannan.

Honorable Director Dr. Srinivasan Sundarrajan was all praise for the guest lecture & congratulated Prof. Kannan Maudgalya for his efforts in the field of research & his work in education through ICT. He thanked Prof. Kannan for his inspiring & knowledge spreading guest lecture by coming down to NIT Trichy. He also hoped students use the knowledge imparted in the guest lecture in a practical way. Dr.N.Sivakumar the HOD of ICE was all praise for the guest lecture. Vote of thanks & concluding remarks were made by Jayanth Parchuri on behalf of ICEA as it's Vice - President. Refreshments were provided by ICEA to the audience.

The Chief Guest was received warmly by Paramasivan Em [Third Year, ICE] who accompanied him to airport & offered him pleasantries on behalf of ICEA. Awiral Kumar Das [Third Year, ICE] took care of the event publicity on campus & Anand Babu S.K, Gopinath Gajapathy [Third Year, ICE] played a crucial role in organizing the event. ICEA was profusely congratulated by the professors & students alike for the engrossing guest lecture & organizing it successfully. The event ended at 5:30 pm.



MATLAB® & SIMULINK® WORKSHOP

One day in class all of a sudden the professor takes his laptop and opens up MATLAB, all students were quizzed about this new software (excluding some geniuses who had an idea about it :P). Finally we were excited that we were going to learn exciting stuff, but all the Prof did was some clicking. And as students from an institute of national importance, we are expected to know stuffs. Then, there was a chance for us to learn MATLAB and other related softwares, when ICEA conducted MATLAB and LABVIEW workshop. With full enthusiasm many students rushed in for the workshop. The workshop was very well organized where free software CDs were distributed and there we learnt SciLab, Lab VIEW and PCB Designing from a whole bunch of supporting seniors. Not to be surprised, the workshop aroused our interest in the softwares and we sought the ways we could implement and verify our theoretical learning through these tools. My classmates wanted to learn more and when I had a talk with Gaurav Kumar (President ICEA) I requested him to conduct an Advanced MATLAB exclusively for 3rd year students and to my wonders he agreed for it immediately. The workshop was conducted on 3/12/2013 from 5-9 pm. Gaurav started with the basics of the MATLAB but this time with more detailing. He created, addressed, retrieved and thus played with matrices in MATLAB. For every problem, he showed us multiple ways to solve. At points, he discussed the specific concepts and their application areas. He provided references to his and his classmates projects, and to the specific chapters in our Control Systems subject curriculum. Gaurav ensured that the session was interactive and interesting by providing assignment problems. He gave us an insight into using MATLAB for Control System problems. It is probably the best help a senior could do for his juniors and we all were thankful to Gaurav to take some time out of his busy schedule to help us learn a software very much needed for the course.

Open Source Workshops

To cater to the growing needs of the instrumentation and control engineering students, the ICEA decided to have a set of workshops intended to teach basics of the soft wares like SciLab, PyLAB etc. The workshops were for two three days in the 2nd week of October for the students of ICE department only. The workshops that had been conducted which were "Introduction to SciLab", "Virtual Instrumentation through PyLAB" and "PCB designing using Eagle". The batches for the workshop were distributed in a span of three days.

Scilab workshop was mainly conducted to spread awareness and encourage people to open source software such as Scilab and Eagle. The workshop was mainly focused on the topics such as

- Introduction to Scilab
- Matrices, functions & operators
- Graphics & plotting
- Subroutines
- Flow control
- Working with GUI
- Matlab vs. Scilab

Students were provided with take away CD's which had all the required software and tutorials in it. The salient features of the PyLAB workshop were

- Environment Basics
- Dataflow Programming Basics
- Common Tools
- Debugging Tools
- Creating Block Diagrams
- Creating Vis
- Customizing VIs
- Loops and Charts
- Data Acquisition System and Instrument Control
- Data Structures
- Handling Errors

PCB designing workshop used Eagle software and following were the main points of the syllabus:

- Installation and Program Start
- Individual EAGLE Setup
- The Concept of the EAGLE User Interface
- Using Libraries
- Drawing a Schematic
- Designing a PC Board
- Designing a Board without a Schematic
- Autorouter, Routing Manually
- Output of Drawings and Manufacturing Data
- Script Files

One of the advantages of pursuing engineering from NIT Trichy is that major companies open up for internship positions on-campus. These opportunities start right from the beginning of fifth semester in case of B.Tech students. Often internships are considered as crucial step in career building. Taking



into account the importance of internships, ICEA has come up with an initiative of "Interns Speak", where senior students who secured internship position on-campus interact with juniors clarifying & counselling on their study doubts & advising on path they might follow to secure an internship on-campus. This concept was conceived & organized by Jayanth Parchuri [Vice-President, ICEA] with due mentoring from Gaurav Kumar Singh [President, ICEA]. The first session of "Interns Speak" was organized on the social media platform Facebook through the creation of thread in the Instrumentation & Control Engineering group of second year students. The first session was taken by Rahul Srivastava [Third Year, ICE] who secured an internship in the prestigious Texas Instruments [TI] in hardware profile. The session was kicked off at 4:40 pm on 8th September 2013 via a Q&A thread which was on till 6 pm. The response was overwhelming with huge number of juniors clarifying their doubts. This interactive session in Technical profile was fruitful directly impacting around 90 students of second year ICE. Many questions were asked ranging from eligibility criteria to profiles & stipend most importantly the path to be taken for qualifying. In the eligibility criteria field GPA cutoff held the roost with maximum questions pertaining to it. Every company comes with a particular GPA cutoff or no GPA cutoff at all but with condition of no standing backlogs. Some companies do come with criteria accepting up-to 1 or 2 standing arrears but such companies are rare. Questions on profiles too were asked with equal enthusiasm in this case. Rahul put up answer as follows - TI came for following profiles- 1. Hardware [analog + digital] 2. Analog Application 3. Digital Application 4. Analog Sales 5. Software. Stipend amount was not mentioned but was specified as handsome. Then tabled were the flow of questions on preparation methods.

All this was summed up by Rahul in the following words- My profile was digital design though this year it opened up with a general hardware profile. First and foremost, let me be clear on the fact that studying for a technical interview is entirely different from preparation for college exams, so you should thoroughly read any book you are following. His choice of books was: 1. Books for digital design a) Morris Mano-digital design b) Floyd and Jain-digital fundamentals c) Charles h Roth-Fundamentals of logic design. Next he moved on to his Interview experience & tips. "In the PI, they will try to touch the basics of the subject. They started with number systems conversion, and then gradually moved on to slightly difficult parts. 80% of the questions will be based on flip flops, timing diagrams, state machine design and remaining they 20% they asked on combinational logic. Questions in the PI will be confusing but if you are strong in your fundamentals, you can answer them with ease", Rahul stated. He then moved on to HR round experience, he summed it up as "This was a mere formality where they ask your family background and other useless stuff. But don't take this lightly as they want to test your communication skills through this. (One guy got filtered out at this stage this time)". With this the interactive session had come to an end. In the end he profusely congratulated ICEA for the initiative & the second years thanked ICEA for the same. The second years were well coordinated by Neepjyoti Baishya [General Secretary, ICEA] who also took charge of the publicity of session. ICEA looks forward for more of such sessions in different profiles varying from management to software in future on direct interaction in auditoriums so as to have an impact on more students.

Interest Groups

The interest group association of instrumentation and control engineering department of National Institute of Technology, Trichy (NIT-T) is first of its kind non-profit students association which is formed with a motive to improve and inspire different interests of engineering students. This feat is possible as instrumentation and control engineering platform allows us to work on many broad domains of engineering. With the support from Dr. S.Sundarajan (Director NITT), Dr. N.Sivakumaran (HOD-ICE) and other faculties we are able to establish ourselves into 9 different interest groups and more on the way. Due to the common interests we share with our fellow members we believe we can achieve marvels in the field of engineering in innovation and competitive challenges put forth by the world onto engineers. We will be organizing different activities, exhibitions, workshops, guest lectures and competitions for students in the course of the next semester. We believe that such a system of student formation would greatly improve our knowledge on engineering and would be a boon for young engineers in the years to come. This inaugural report give us the rulebook, introduction of the initial groups, their activity agenda and primary members list of final year and 3rd year BTECH students.

Currently, the following interest groups are carrying out their activities:

- Avionics/ Aeronautic/ Aerospace
- Robotics/Labview NIyantra
- Automobile Engineering/BAJA(ICE)
- Advanced Control Systems
- MS. Preparation
- Graph Theory/Programming
- RADAR Technology/ Analog Electronics
- Signal Processing systems and Design
- Financial Practices



HIGH TECH SECURITY GLASS

Scientists develop new motion sensor that enables window panes and glass doors to detect movements via a special coating.

Professional thieves beware! In addition to motion sensors, security cameras, flood lights, rent-a-cops and Doberman pinchers, there's a new piece of technology designed specifically to ruin your day. And to make matters worse, it's invisible. Well, not exactly invisible, but stare right at it and you won't realize it's there. Worried? Thanks to a novel new motion sensor developed by the Fraunhofer Institutes for Applied Polymer Research IAP in Potsdam-Golm, Germany, you should be.

It seems the beaker-tweakers at Frounhofer have figured out a way to turn regular glass doors and windows into high tech security devices. The glass itself is coated with a fluorescent material containing nanoparticles that convert light into fluorescent radiation. When the invisible light of a UV lamp "illuminates" the glass panes, the fluorescent radiation generated is channeled to the edges of the window, where it is detected by sensors. For example, if someone (The Hamburglar) steps into the light of the lamp, less light reaches the coating and less radiation is produced. When sensors are installed on all four sides of the window or door frame, statistical conclusions can be drawn from the data as to how large, how fast and in what direction the object d'crime is moving (toward the burgers). In other words, a hummingbird won't trip the alarm.

The software, designed by Computer Architecture and Software Technology FIRST in Berlin, is so smart it can even interpret different light signals. This enables the system to easily distinguish between the frequency of the UV lamp and the slowly changing light from a passing car's headlamp.

THE TEAM

GAURAV KUMAR SINGH

JAYANTH PARCHURI

JIVITESH KUMAR

KRISHNAN V

PRADNYA MUNGHATE

SIDDHARTH VERMA



SENSE. CONTROL. ACTUATE.