



**IEEE**



# LIVE WIRE

BY STUDENT CHAPTER OF IEEE-CRIT  
FR. CONCEICAO RODRIGUES INSTITUTE OF TECHNOLOGY  
YEAR 2019-2020

## IEEE-CRIT COUNCIL MEMBERS (2019-2020)



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CHAIRPERSON



MIHIR GAWAND  
ASST. CHAIRPERSON



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SECRETARY



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MDO

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## MESSAGE FROM THE BRANCH COUNSELLOR



Mrs. Bindu R (IEEE Student Branch Counsellor, FCRIT)

Engineering scholars should develop problem-solving skills with an innovative mind-set along with their interpersonal and team working skills to become tomorrow's successful professionals and entrepreneurs. Our Institute provides integrated education to the budding engineers with a motive of their overall development by providing them various forums and opportunities to develop and showcase their technical as well as leadership potential.

IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. IEEE Student branch at Fr. C. Rodrigues Institute of Technology (IEEE-CRIT) is formed on 6<sup>th</sup> April 2000 under IEEE Bombay Section. It has been instrumental in promoting its members to organize and participate in various technical events, workshops and seminars.

In the academic year 2019-20, our IEEE student branch organized various technical and educational events where the students got an opportunity for interacting with students of other engineering colleges in the state. It is my pleasure to congratulate the IEEE-CRIT Council of 2019-20 for their whole hearted efforts in making all the events successful, especially hosting the seminar by Dr Kashem Muttaqi, Professor at the school of Electrical, Computer and Telecommunications Engineering, member of Australian Power Quality and Reliability centre at the university of Wollongong, Australia and Associate Editor of the IEEE Transactions on Industry Applications. I also congratulate them for their efforts to arrange a webinar by the renowned speaker, Dr Sheldon

Williamson, Professor, Ontario Tech University and Canada Research Chair in Electric Energy Storage Systems for Transportation Electrification, amidst the Covid-19 pandemic situation. I also appreciate the editorial team for bringing out this year's LIVEWIRE edition in time.

I am grateful to the Management, Dr S.M. Khot (Principal), Dr Bindu S (HOD of Electrical Engineering) and Dr Milind Shah (HOD of Electronics and Telecommunication Engineering) for providing support and the Infrastructure. Also, on behalf of IEEE Student Chapter of FCRIIT, I thank everyone who came forward to participate and help us in all our endeavours.

## EDITOR'S NOTE

**NIMISH GHARAT**

**JAY PATIL**

**EDITOR, IEEE-CRIT.**

The academic year 2019-2020 ended rather abruptly due to the Covid-19 pandemic but the council still managed to conduct the targeted events for the members. Welcome to IEEE LIVE WIRE 2020.

This magazine gives you an overview of the seminars, workshops and also a webinar during the lockdown that were organised by the IEEE council of Fr.CRIT in the academic year of 2019-2020.

**“Science can amuse and fascinate us all, but it is engineering that changes the world.” — Isaac Asimov**

IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity. For the latest research and innovations in the many diverse fields of electrical and electronics engineering, industry and individuals look to the IEEE.

The council members of IEEE-CRIT of the academic 2019-20 have attempted to encourage students to expand their technical horizons and tried to bridge the gap between the industry's requirements and the curriculum through various activities.

The activities and competitions wouldn't have been possible without the support and guidance of Mrs. Bindu R. We are also grateful to everyone from the organizers, to the college staff and also to the previous council members for their help and contribution. Also, a special thanks to the student council of Etamax 2020 for their support. And lastly much appreciation for all the students who participated in those organized events and activities and the student members of the IEEE-CRIT. All the council members including us are fortunate and obliged to be give this opportunity.

All the best to the forthcoming IEEE-CRIT council.

## THE YEAR AT A GLANCE

### *A. SEMINAR ON RENEWABLE ENERGY, ENERGY STORAGE AND ELECTRIC VEHICLES*

The student chapter of the IEEE-CRIT invited Dr Kashem Muttaqi to deliver a seminar on the topic **'Renewable energy, Energy storage and Electric vehicles.'**



Prof. Muttaqi received the Ph.D. degree in Electrical Engineering from Multimedia University, Malaysia. Currently, he is a Professor at the school of Electrical, Computer and Telecommunications Engineering, and associated with Australian Power Quality and Reliability centre at the university of Wollongong, Australia. He has authored and co-authored 315 papers in international journals and conference proceedings. His research interest includes distributed generation, renewable energy, electrical vehicles, micro-grids, smart-grid, power system planning and emergency control. He is also a Senior member of IEEE Technical Committee paper review chair for industry automation and control committee associated with the IEEE Industry Application Society.

The seminar was conducted on the 7th of January 2020 at 11am in the seminar hall of the mechanical department. The seminar was attended by the students of semester 6 of the mechanical and electrical departments.



Dr Muttaqi shared his views on the rise in power demand due to the rise of electric vehicles in the market and some of the projects he is currently working on such as smart storage systems for renewable energy storage and industrial microgrid projects.

The event ended by a thank you speech to Dr Muttaqi which was delivered by the chairperson of IEEE council 2019-2020 and finally he was given a token of appreciation by the HOD of electrical department Dr Bindu S.





## B. TECHPULSE 2020

IEEE-CRIT conducted a State Level Technical Paper Presentation Competition under '**Techpulse 2020**' on 17<sup>th</sup> January 2020.

The Technical Paper Presentation event hosted a total of 8 teams presenting papers from various backgrounds of engineering like Electrical, Computers, Information Technology and Mechanical. The panel of judges consisted of Mrs. Poornima Rao, Ms. M. Kiruthika, Dr. Savitha Upadhay and Mr. Mathewlal Thomas. The judges ensured a fair judgement for presentations of all the participant teams.



The event commenced at 10 am. Each team consisted of maximum of 2 team members. A great enthusiasm was seen in the participants. All the technical papers were very well prepared by the participants. The teams showcased their research and the immense efforts they had put in the papers. The participants were eager to gain knowledge from other technical papers as well. All the teams defended and answered the questions asked by the judges very well.





The winners of the competition were Naeem Patel and Shantanu Shinde with paper titled 'Automated Question Generation using Deep Learning'. The second prize was won by Shreya Pai and Vipul Borhade with paper titled 'Video Forensics' and the third prize was won by Suraj Mahanagade and Varad More with paper titled 'Line Detection using Image Processing'.



## *C. EAGLE WORKSHOP*

A Workshop on '**PCB Designing using Eagle Software**' was organised by the IEEE-CRIT Students Chapter on 25<sup>th</sup>, 26<sup>th</sup> Feb and 4<sup>th</sup> March, 2020. The workshop took place for three days and was conducted by Prof. Jatin Desai of the Electronics and Telecommunications Department.

This workshop focused on the basic interface of Eagle software, PCB schematic diagram on Eagle and PCB routing. Students were also taught about the practical implementation of the PCB designed circuit on copper clad board. Students from first, second, and third year from various branches attended the seminar. The seminar was quite informative for the students, who were eager to learn PCB Designing as this knowledge comes in use during their course projects as well as the final year engineering projects.



Jatin Sir started with basics of Eagle software being considerate of first-year students who were mostly using the software for the first time. To begin with, students were taught to identify the correct components in Eagle libraries. Students learnt to find right components according to their parameters in datasheets from the right libraries in Eagle software. Sir started with simple voltage regulator circuit so that the students would find it easy to understand. Then, preparation of the schematic of the given circuit was taught. On the second day, information regarding PCB layout was given to students. The students prepared the schematics and PCB layout on their laptops as laptops were recommended for every participant student. So, the students got hands

on practical experience in PCB designing. On the final day, Sir taught practical implementation of the PCB layout on a copper clad board. The process included printing of the layout on glossy paper, transferring the layout on the copper clad and finally the etching process. During the sessions, Sir used to go around the class and solving the problems encountered by students related to the software and PCBs.



The session last session ended with a QnA. A letter of appreciation with a gift was given to Prof. Desai by the chairperson and vice chairperson.



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## *D. LECTURE BY Dr SUSHIL THALE*

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A seminar was conducted by the IEEE-CRIT council on 11<sup>th</sup> of March by Dr Sushil Thale. The topic of the lecture was '**Industrial Product Design Aspects**'.

Dr Thale has completed his Ph.D. from IIT Bombay with the specialisation on Power Electronics and Power Systems. He has also authored and co-authored over 40 research papers which were published in various journals and conferences. He is currently the Dean (R&D) and professor at the electrical department of our Fr. C. Rodrigues Institute of Technology.



Dr Thale spoke about the various aspects a student needs to understand while doing a particular project and while designing and development of an electrical circuit. He talked about the thought process while deciding a project and the way it should be implemented to make the project stand out at an industry level. He spoke about the industry norms to be followed while development of any new product. He talked about how to decide whether to take up an industrial project or not from the certain industry. He spoke about how to find out what needs to be done and how, the requirements of the project as well as component selection and material procurement. He spoke about how important it was for the students to understand the basics of resistors, inductors and

capacitors. This knowledge of component selection would help them to design almost any circuit.



The seminar was allowed for all the branches of all years. Majority of the students were from the 3rd year. There was a good participation from the 1st and 2nd years students as well.

A very good response was obtained from the students. The students attended the workshop with great enthusiasm and the will to learn new things and gain knowledge.



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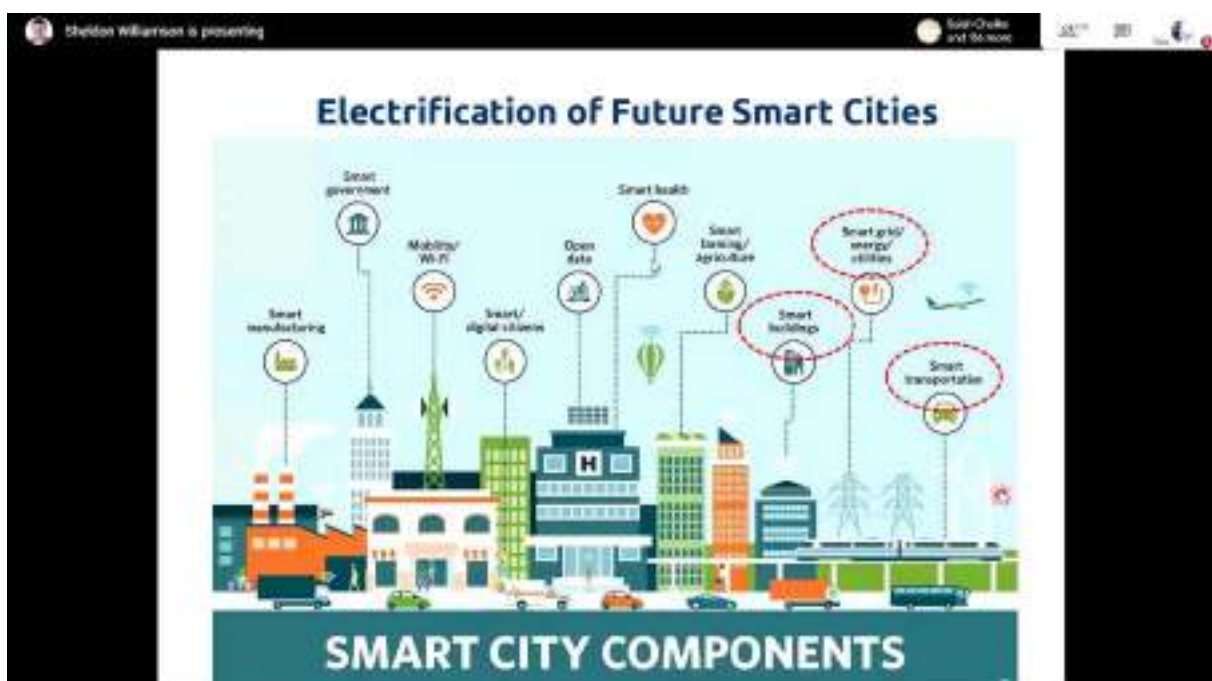
## *E. LECTURE BY DR. SHELDON WILLIAMSON*

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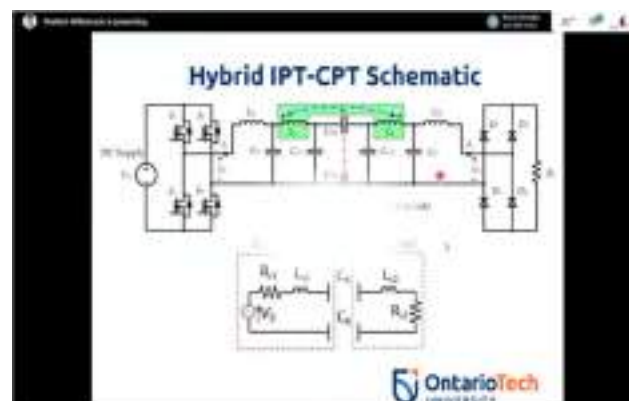
As the college was closed due to the Covid-19 pandemic the IEEE-CRIT council decided to organize a webinar for the students. The webinar was conducted by Dr Sheldon Williamson on the topic **'Advanced Autonomous Transportation Electrification Solutions for a Smart City Evolution with Social Implications.'**

Dr Sheldon Williamson is an alumnus of our college. He graduated in the year 1999 with a degree in electrical engineering. After which he went on to pursue a master's and PhD in automotive power electronics and motor drives. He is currently a professor and NSERC research chair at the University of Ontario Institute of Technology doing integrated research and teaching in the areas of power electronics, motor drives, and electric energy storage system for transportation electrification and e-mobility.

The webinar was attended by the students of electrical and extc department as well as the ME students of our college. There were participants from other colleges too. There was a total of 122 participants and 9 faculty members of FCRIIT.

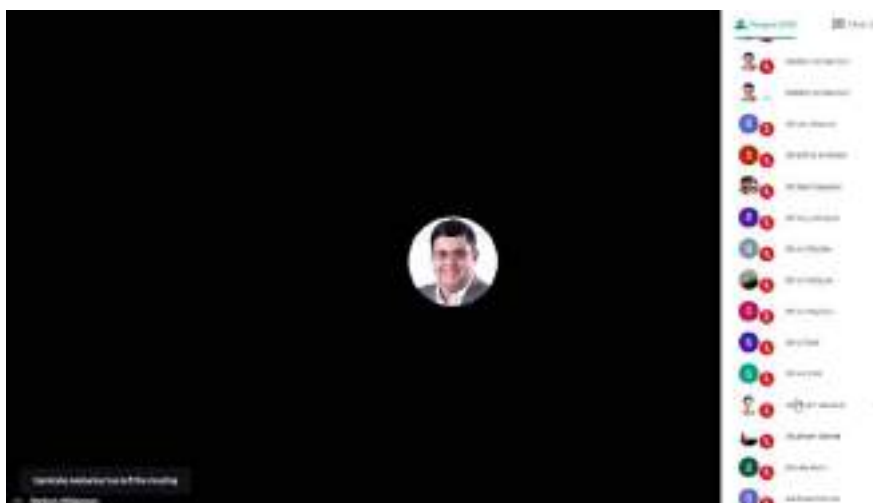


The Webinar started off with topic of transportation electrification in the world scenario after Covid-19 pandemic. The speaker talked about how mobility can be started up again using micro mobility options. Micro mobility modes give travellers a private vehicle alternative along with reducing traffic issues. DRONET technology has come up where multiple drones are used together in which the drones are connected to each other with cables. Wireless charging options using inductive/capacitive power transfer was discussed. The speaker talked about the topologies used for inductive and capacitive power transfer. Hybrid IPT-CPT schematics were also discussed. Later, PV/Grid/EV Integrated Charging Infrastructure methods were explained. Various types of charging techniques were discussed if electric vehicles were to be operated as public transport.



One of the prominent topics of the lecture was the charger installed beneath the road at bus stops so that whenever buses halt at the stop they will get charged for that time of period.

The session ended with a QnA sessions with the students.





## ARTICLES FROM TECHPULSE 2020 WINNERS.

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### *A. ABSTRACT FROM THE PAPER OF WINNING TEAM*

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**Paper Name:** “Questionator- Automated Question Generation using Deep Learning.”

**Authors:** Animesh Shrivastava, Shantanu Shinde, Naeem Patel, Siddhesh Deshpande, Anuj Dalvi, Shwetha Tripathi.

**Abstract:**

Due to a boom in the amount of data generated every day, there is a need for automation in the education domain where it is humanly impossible for a single individual to make sense out of the data even for a simple task such as generating questions for a quiz or a test. Automatic question generation for textual inputs is valuable in academics where answering questions helps students to learn and improve their understanding of their field of study. Automatic question generation finds application in dialog systems or virtual assistants where asking questions is an important part of interactions between humans and machines. In this paper, we propose a state-of-the-art solution using a pipeline that utilizes natural language processing and image captioning techniques capable of generating questions not only for textual but also for visual inputs. Along with the question, distractors for the generated questions and their answers are also created.

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## *B. ABOUT THE PAPER OF FIRST RUNNER TEAM*

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**Paper Name:** “The PRNU Algorithm of Video Forensics”

**Authors:** Shreya Pai, Vipul Borhade, Madhavi Bhilagoankar

**About the Paper:** -

In recent years, the authentication and validation of the content has become more and more difficult. Forging of videos has become much easier because of availability of video editing suites.

Video forensics relates to the re-construction of the processing history of a given multimedia signal. The non-reversible operations applied to a signal leave some traces (footprints) that can be identified. These footprints are classified in order to reconstruct the possible alterations that have been operated on the source. One can say that this detection of footprints is a sort of reverse engineering.

The PRNU Algorithm of Video Forensics is used to prove the authenticity and the verifiability of a video in a court of law. It is one of the most primary and necessary steps carried out upon the submission of video and devices to the court. The PRNU algorithm shows whether “the video is recorded with the device through which it claims to be”. That is, it carries out Source Camera Identification.

In any acquisition chain of the capturing of a video, there are certain unique fingerprints left behind on the acquired content. In other words, PRNU noise is caused by the peculiarities and imperfections in the sensors. As it is non-linear in nature, it becomes difficult to remove and provides a much stronger and reliable fingerprint than any other noise pattern. Even the compression of videos will not affect this noise. If we capture this noise pattern, we can create distinctive connections between the source camera and the video.

We have submitted our paper titled “The PRNU Algorithm of Video Forensics” in the well-acclaimed journal of Digital Forensics (4N6) in the May 2020 issue. It has been exciting to work on this topic of video forensics.

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## *C.ABOUT THE PAPER OF SECOND RUNNER UP TEAM*

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**Paper Name:** Line Detection using image processing

**Authors:** Suraj Mahangade, Varad More, Saurabh Kothari & Tanmay Gujar

**About Paper:**

The paper discusses an efficient and inexpensive setup for pose estimation of a robot for line following using image processing implemented on open-source hardware [Raspberry Pi] and software.

We were working on an autonomous bot for a competition named ABU Robocon. As we were in search of an efficient line following mechanism, which could be operational from a certain height. We used an inexpensive setup with a mother processor as Raspberry pi and used advanced image processing techniques and custom algorithms for efficient detection of line. As robotics is a Developing Sector most of the research is based on visual perception and behavioural planning. These autonomous bots require a firm solution for visual perception. Which could overcome the inconsistency of primitive sensors like LSA08. This technique could be beneficial for society including all newbies and industrialists for implementing this visual perception technique algorithm.

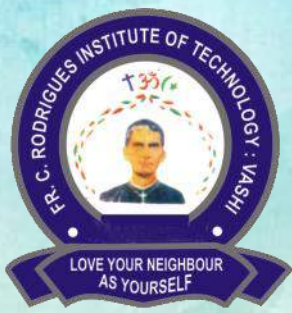
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## *IEEE MEMBERS 2019-2020*

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- Ameya Manoj Satpute
- Atharva Santosh Pasalkar
- Sanmitra Mandal
- Anvesh Dipak Rane
- Anand Unnikrishnan
- Shreya Sushil Sapale
- Trevor Aaron Robert Dcosta
- Shruti Sandip Ghodke
- Shwetha Nagaraj Salimath
- Nabhya Jitendra Jha
- Yash Ashwin Mistry
- AntoSen
- Angela Infanta Ramesh
- Nikita Chandrkiran Bhole
- Kushagra Goel
- Jay Dinesh Patil
- Mihir Suresh Gawand
- Nimish Abhay Gharat
- Pratik Brian Trevor Pinto
- Ruchit Bhanudas Patil
- Bhavesh Hariom Sharma
- Shubham Sanjay Mohite
- Aditya Prakash Tare
- Siddhika Suryakant Patil
- Aniruddha Sainath Parab





FR. CONCEICAO RODRIGUES INSTITUTE  
OF TECHNOLOGY

# SCINTILLA

EESA 2019-20

# FROM EDITORIAL TEAM

For many of us, every new year marks a chance for renewal, and 2020 is no exception. Every story in this issue speaks about challenge, opportunity, and the transformative power of hope.

Dear Readers,

We proudly present magazine with this year's theme "SCINTILLA" depicted on the magazine's cover. *Scintilla* means *atom* where in *atom* is our department and consists of students and faculties who make our department complete similar to *electrons* and *protons* in an *atom*.

As you flip through the pages of the magazine, you will be able to read about various events organised by EESA throughout the year to keep us updated with latest technology. The various seminars, training programs and competitions helped us to tread on this never ending path of learning.

We hope that you take time to go through our magazine. There is so much to read, so much to ponder and so much more to know because like they always say, we are truly after all still learning.

# From the HOD



To say Covid-19 has disrupted our daily life would be an understatement. However, this shouldn't deter us from achieving the academic goals that we have set for this year. Thanks to the technological boom, virtual learning has become the new normal. Personally, I see this as a chance for students and teachers to learn new things or rather unlearn old things. I agree that the current scenario is quite overwhelming, but we should all try to transform this crisis into a winning opportunity; the work for which I believe has already begun. And looking at how things are progressing for us Agnelites, it is safe to say that we are on the right track.

Regards,

Dr Bindu S

HOD

Department of Electrical Engineering



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# ELECTRICAL ENGINEERING AT F.C.R.I.T

Electricity has been a subject of scientific interest since at least the 17th century and hence is considered as one of the oldest branch of engineering. The students are taught to design, analyze, implement and operate electrical and electronics systems efficiently, thus opening the doors to new challenges. In this aspect the students are given in-depth knowledge in Machines, Power Systems, Control System, Signal Processing Drives, Power Electronics Microprocessors and Switched Mode Power Supplies. To impart this we have well qualified experienced and dedicated staff in the department.

# VISION & MISSION OF INSTITUTE

## VISION

To evolve and flourish as a progressive centre for modern technical education, stirring creativity in every student leading to self-sustainable professionals, through holistic development; nurtured by strength and legitimate pride of Indian values and ethics.

## MISSION

1. To provide industry oriented quality education.
2. To provide holistic environment for overall personal development.
3. To foster relationship with other institute of repute, alumni and industry.

# VISION & MISSION OF ELECTRICAL DEPARTMENT

## VISION

To evolve as a progressive centre for modern technical education in the field of Electrical Engineering to produce self-sustainable professionals through value based education

## MISSION:

1. To provide modern technical education in the area of Electrical Engineering.
2. To collaborate with industries and institutes of repute to grow progressively.
3. To provide holistic environment for the development of socially responsible citizens.

## PROGRAM EDUCATIONAL OBJECTIVES (PEO):

Graduates will be able to...

1. Demonstrate core competency in the areas of power system, power electronics, machines, renewable energy and allied disciplines
2. Contribute to environmental sustainability through design, development and commissioning of green energy or clean energy systems
3. Excel in professional career and higher education with ethical values.

## PROGRAM SPECIFIC OUTCOMES (PSO):

Graduates will be able to...

1. Comprehend and analyze the problems in power generation, transmission and distribution systems.
2. Acquire technical knowledge, skill and competency in development of Renewable energy system and contribute to energy efficiency

# STAFF PUBLICATIONS

## JOURNAL PUBLICATIONS

Sr. No.	Title of Paper	Details	Author/Co-author
1.	Solving Travelling Salesman Problem Using Ant Systems: A Programmer's Approach	International Journal of Applied and Computational Mathematics IJACM, (2019) 5: 101. <a href="https://doi.org/10.1007/s40819-019-0662-7">https://doi.org/10.1007/s40819-019-0662-7</a> , Springer India, ISSN: 2349-5103 (Print) 2199-5796 (Online).	Divya M.
2.	Mitigation of Harmonics and Unbalanced Source Voltage Condition in Standalone Microgrid: Positive Sequence Component and Dynamic Phasor based with Real Time Approach	Heliyon, Elsevier. <a href="https://doi.org/10.1016/j.heliyon.2019.e01178">https://doi.org/10.1016/j.heliyon.2019.e01178</a>	M. S. Rane, S.R.Wagh
3.	Impact Analysis of PV-Integrated Grid Using Time Scale Modelling	International Review on Modelling and Simulations (IREMOS), 11(5), 2019, pp. 343-351.	Mahendra Rane, S.R.Wagh
4.	Development of dynamic phasor based higher index model for performance enhancement of dual active bridge	Electric Power Systems Research, Elsevier, 168, 2019, pp. 305-312	M. Monika, Mahendra Rane, S. Wagh, A. M. Stankovic, N. M. Singh

5.	Multiple output dc-dc converter derived from Cock-Croft Walton voltage multiplier and SIMO converter	International Journal of Research in Engineering and Innovation, Volume-4, Issue-3 pp 137-142, 2020.	Abhishek Kanchan Shiwalkar, Shilpa Ravindra Shinde
6.	Low Voltage Ride-Through Capability of a Novel Grid Connected Inverter Suitable for Transformer-Less Solar PV-Grid Interface	IEEE Transactions on Industry Applications, vol. 56, no. 3, pp. 2799-2806, May-June 2020, doi: 10.1109/TIA.2020.2979134.	Mini Rajeev and Vivek Agarwal
7.	Power Management Strategy for an Electric Vehicle Driven by Hybrid Energy Storage System	IETE Journal of Research, Taylor & Francis, Mar 2020. Available online at <a href="https://doi.org/10.1080/03772063.2020.1729257">https://doi.org/10.1080/03772063.2020.1729257</a>	R. Bindu and Sushil Thale
8.	Performance Analysis of Power Sharing Control Strategies for Battery/Ultracapacitor Hybrid Energy Storage Based Electric Vehicle	International Review of Electrical Engineering (IREE), Accepted on 24 <sup>th</sup> April 2020	R. Bindu and Sushil Thale
9.	Classification of Electrical Power System Conditions with Convolutional Neural Networks	Engineering, Technology & Applied Science Research, Accepted on 8 <sup>th</sup> May 2020	M. Kiruthika, S Bindu

## CONFERENCE PUBLICATIONS

Sr. No.	Title of Paper	Details	Author/Co-author
1.	Modeling and Performance Analysis of Battery	Electric Vehicle 2nd International Conference on Power and Embedded Drive Control (ICPEDC-2019), August 21-23, 2019, Chennai, India.	Salil Patwardhan, Bindu R., Sushil Thale
2.	Design and Development of AC Microgrid Power Conditioning Unit for Renewable Energy Integration," submitted and under review at Int. Conf. CAC3, Dec 2019, Mumbai.	Submitted and under review at Int. Conf. CAC3, Dec 2019, Mumbai.	Misbah Khan and Sushil Thale
3.	Experimental Validation of a Transformer-less Inverter with improved gain for Grid-PV Interface	NPEC-2019, NIT Trichi, 13-15th Dec. 2019.	Omkar Patkar, Mini Rajeev
4.	A case study on grid integrated Microgrid system	International conference on sustainability and management practices (ICSMS2019).	Pratik Raut, Sourabh Shelke, Poornima Rao
5.	Active Battery Balancing using Ćuk Converter	National Conference on Renewable Energy and Sustainable Environment NCRESE-2019, NIT Kurukshetra, Aug 2019.	Nikhil Sarode, Divya M
6.	Design and Simulation of Low Power Charging Station for Electric Vehicle	IEEE International Conference on Advances in Computing, Communication and Control (ICAC3 19) December 20 - 21, 2019.	Seema Jadhav, Suraj Kamat

6.	Design and Simulation of Low Power Charging Station for Electric Vehicle	IEEE International Conference on Advances in Computing, Communication and Control (ICAC3 19) December 20 - 21, 2019.	Seema Jadhav, Suraj Kamat
7.	Analysis and simulation of quasi z-source inverter with energy storage system	International Conference on Communication, Electronics and Electrical Engineering, New Delhi, India, October 06, 2019.	Muazzam Phansopkar, Mahendra Rane
8.	Analysis and Control of Quasi Z-source Inverter with Digital Current Control for Energy Storage	8th International Conference on Power system, Jaipur, India, December 22, 2019.	M. Phansopkar, Mahendra Rane, Sushil Thale
9.	Design, Analysis and Hardware Implementation of Modified Bipolar Solid-State Marx Generator	7th International Conference on Advances in Energy Research (ICAER 2019) 10-12 December 2019, IIT Bombay, Maharashtra, India	Neelam Pinchari, Dr Bindu S



10.	Significant Role, Design and Stability Analysis of Flyback Converter in Demand-side Management of Distributed Power	IEEE International Conference on Advances in Computing, Communication and Control (ICAC3 19) December 20 - 21, 2019.	Harshada C. Bhosale, Rashmi Kale, Ruchi Harchandani
11.	FPGA Accelerator for Real-Time Emulation of Power Electronic Systems Using Multiport Decomposition	National Power Electronics Conference (NPEC), December-19, NIT Trichi.	Mini K Namboothiripad, Mandar J Datar, Mukul Chandorkar, Sachin Patkar,
12.	FPGA-Based Acceleration of LU decomposition for Analog and RF Circuit Simulation	VLSID 2020-33rd International Conference on VLSI Design, January-20, Bangalore.	Yogesh Mahajan, Shashank Obla, Mini Namboothiripad, Mandar J. Datar, Niraj Sharma and Sachin Patkar

# MINI PROJECT COMPETITION

An intra-departmental Mini Project competition was held on 03/08/2019 for 5<sup>th</sup> semester students under *Institute of Engineers, India (IEI)*. Under this competition 18 groups, of 4 members each, participated in the competition. The groups were judged by Mr. Ramchandra Bhosale, IIT, Bombay.

A cash prize of 3000/- for first winners, 2000/- for the second winners and 1000/- for third winners were awarded along with the certificates.

Sr. No.	Roll. No.	Name of Students	Title of Project	Remark
1	401738	PADIR RUSHIKESH A.	Two Wheeled self-balancing Robot Using Arduino	1 <sup>st</sup> Prize
	401739	PANIGRAHY ANJAN A.		
	401742	PATIL HEMANT R.		
	401745	PATIL RUCHIT		
2	401767	KHAPNE SUKANYA RAMESH	Office Light Sensor	2 <sup>nd</sup> Prize
	401768	LATHIA NISHIL PRAFUL		
	401773	PARAB KRUNAL ARUN		
	401775	PHADALE AMRUTA DILIP		
3	401736	NARKAR DEEPESH D.	Smart Garden	2 <sup>nd</sup> Prize
	401749	SASE MANDAR N.		
	401752	SHASTRI JITESH Y.		
	401753	SHIRUDE AJINKYA G.		
4	401706	CHIDRAWAR VAIBHAV	Transmission line fault detection using Arduino	3 <sup>rd</sup> Prize
	401764	BANKAR PRASAD ROHIDAS		
	401770	NALAVADE AMITKUMAR BALASO		
	401776	POTDAR MAHESH DEVENDRA		
5	401702	BANSODE SIDDHI S.	Digital Taxi Fare Meter Using Arduino	3 <sup>rd</sup> Prize
	401723	KALVA RAHUL S.		
	401726	MANDAL SANMITRA		
	401732	MISHRA SWAPNIKA		

# TRAINING PROGRAM ON PLC AND SCADA

Electrical department had organized 5 days certification course on 'Training program on PLC and SCADA' from Nov 29<sup>th</sup> to Dec 4<sup>th</sup>, 2019. Mrs. Ruchi Harchandani was the staff coordinator of the course. 21 students of Sem V and Sem VII participated in the course. Dr. Bindu S, HOD of Electrical department inaugurated the course by telling the importance of this course. The PLC theory as well as practical session was taken by Mrs. Mini N. and Mrs. Ruchi H. The topics covered were Introduction to PLC, Input output field devices, block diagram of PLC, memory unit, relay ladder logic circuit, data files of PLC, Demo on Speed control of SQIM using PLC and SCADA, Fundamentals of PLC programming, building a ladder

diagram, timer instruction and PLC program execution, Multi rung control and Relay logic instructions, Counter instruction and DATA manipulation instruction, Advanced PLC programming Instructions i.e. Jump, Shift, latch and unlatch, Experiments on PLC using instructions. The SCADA session was held on 3<sup>rd</sup> Dec which was taken by an industrial person from Prolific Pvt. Ltd. Various hardware experiments on PLC and SCADA were shown. To provide hand-on experience a small project competition was organised in which students made projects on real life problems. The group consisting of Darshan Kocharekar, Lokesh Nagar, Ankit Hangloo and Sayantan Das won the 1<sup>st</sup> prize.



# VIDYUT SEMINAR

Electrical Engineering department had organized one day seminar under "Vidyut", for Electrical students, on Industrial topics that are trending in the industries which will help the students to know more about them. To impart knowledge on such topics eminent speakers and experts from industry were invited to deliver sessions.

## VIDYUT - II HALF OF 2019

Date	Topic	Speaker
20/07/2019	Employability skills	Ms. Ann Mathew
20/07/2019	Professional Ethics career aspects in PSU	Mr. Anand Kumar



## VIDYUT - I HALF OF 2020

Date	Topic	Speaker
07/03/2020	Industrial safety and accident prevention	Mr.N.N. Pisharody
07/03/2020	Entrepreneurship	Mr. Saurabh Sinha
07/03/2020	PLC Automation and Introduction to Industry 4.0	Mr. Alister D'Silva
07/03/2020	Communication skills	Mrs. Rohini Chandramouli



# WIRELESS POWER TRANSMISSION SEMINAR

**Wireless power transmission** is the transmission of electrical energy without wires as a physical link . In a wireless power transmission system, a transmitter device, driven by electric power from a power source, generates a time-varying electromagnetic field, which transmits power across space to a receiver device, which extracts power from the field and supplies it to an electrical load. The technology of wireless power transmission can eliminate the use of the wires and batteries, thus increasing the mobility, convenience, and safety of an electronic device for all users.

A seminar on "**Wireless Power Transmission**" was conducted by the EESA council, on the second day of Etamax 2020, on 18<sup>th</sup> January 2020. It was attended by 90 students. The speaker Salmon Joy started seminar by underlining a few of WPT methods and their pros, cons and its viability in current global market.

The seminar covered topics such as Inductive Power Transfer, Capacitive Power Transfer, Controls of Wireless Power Transfer. Also, few video clips of Experimental proof of WPT were shown during the seminar. The Speaker then discussed about Wireless Charging which is currently implemented for Electric vehicles and various other electronic appliances. There was another brief about Solar Power Satellite which works on concepts of collecting Solar Power in outer space and distributing it to earth via WPT.

The seminar ended with a question and answer session and then speaker concluded the seminar



# AURORA FEST

## DESIGN THE CIRCUIT

**Event Coordinators** - Sanmitra Mandal & Shruti Ghodke

**Description** -The event was conducted among 6 teams with 2 students in each team. A set of 5 resistors was given to each team and were expected to make the equivalent circuit for specified voltage drop across the resistance.

The event had two teams from semester 6, one from semester 2 and remaining from semester 4. Students enjoyed the competition and made it a successful event.

**No. of Participants** - 12

**Winners** - Mandar Sase & Karan Mankar



# TECHNICAL QUIZ

**Event coordinators:** Anjan Panigrahy & Tanay Mistry

**Description:** The whole event was divided into 3 rounds testing student's technical skills as well as general knowledge.

## Round 1: Identify the components

In this round various components were placed and participants need to identify them along with their values.

## Round 2: Crossword

This round was basically general knowledge test, where participants need to identify the perfect word for given puzzle.

## Round 3: MCQ

The top 4 groups were asked questions on the application of various electrical concepts in the practical world.

**No. of participants:** 42 ( 21 teams of 2 each)

## **Winners:**

1. Prasad Bankar & Mahesh Potdar
2. Mihir Gawand & Rushikesh Padir





# TREASURE HUNT

**Event Coordinator:** Vivek Kushwaha, Manasi Bansode, Tejas Joshi & Hemant Patil

**Description:** This might just be the one prone to the phenomenon of 'the slots are full, we are sorry!'. The clues spawning all over the Electrical premises sent the contestants flying in a dash against one another and time itself. The contest comprised of eight four - member teams and five rounds. Also joining the fun were EESA coordinators assigned to each team to prevent any malpractice. Struggling to keep up with the competitors, while adhering to the rules, the contestants' thought process under pressure was tested. The chaos ensured for no more than an hour and a half and culminated with the winners figuring that last bit of the puzzle.

**No. of participants:** 32 (8 teams of 4 each)

**Winners:** Vedant Rajput, Udayraj Tawde and Avinash Saruk



# TREE PLANTATION

*“Trees are the best monuments that a man can erect to his own memory. They speak his praises without flattery, and they are blessings to children yet unborn.”*

The EESA Council 2019-2020 organized a tree plantation program on 24<sup>th</sup> August 2019 , considering the need of reforestation due to rapid rate of trees being cut down. This activity took place under the guidance of Dr. Ravi S. Kumar. He is the CEO and Managing trustee of the ‘Freedom For You Foundation’ (Freedom 4U). This is an Airoli based NGO.

The tree plantation was done on a hill in Baneli Village in Kalyan taluka. Around 21 students participated in this event. All the participants reached the place by 9.00 am. Dr. Ravi guided about the procedure to plant a sapling and then the plantation began. There were pits which were already dug in so that it would be easy to plant trees. Students worked from 10.00 am to 3.00 pm.

The saplings included plants like neem, mango, peepal , tamarind , bamboo and there were some medicinal plants too. Around 100 saplings were planted in total. The program created a great stir among the general public too. The participants were highly enthusiastic to make it a big success. They enjoyed a lot since it was like a stress buster from their daily routine and it gave them an opportunity to experience nature very closely.



After the plantation. Ravi sir briefed the students about some more projects of their NGO. The program ended by distribution of certificates.

One of most basic skills to develop as an engineer is to innovate but with utmost care for the environment. Planting a tree is least we could do by doing our part not only to protect the environment around us but also to make so that our future generations can enjoy the clean and beautiful greens that we do.

*Until you dig a hole, you plant a tree, you water it and make it survive, you haven't done a thing. You are just talking. – Wangari Maathai*



# ULTRA-CAPACITOR: THING OF THE FUTURE

Researchers recently discovered something that could change the whole EV charging game. If their predictions are accurate, we could one day live in the world where cars can be fully charged in minutes instead of hours and their power storage units would last decades instead of years. Currently we are using lithium-ion batteries which rely on chemical reactions. In contrast capacitor store static electricity, no electrolytes, no shuffling ions, just electrons on a plate waiting to pounce like a caged lion. As a result capacitors can be fully charged almost instantly and since they can also deliver energy quickly, that means capacitors can provide more power than batteries.

**Problems :** There is a drawback though. They just cant hold very much energy. There are tricks to squeeze more charge onto the plates like increasing their surface area and reducing the distance between them by swapping out air with a thin insulator. But even then, the best super-capacitor today hold just 10 watt-hours per kg, about 5% of the energy of lithium-ion battery of same weight.

However using parallel combination of supercapacitor and battery could enhance the battery life. Supercapacitors delivers energy during ride through periods, which typically are during starting or during overloads.

Its just a matter of time until advancement come in supercapacitor technology. Once its done then we it will not be in Kilo-Watt hour business, but the Mega-Watt second business.



# MAINSTREAM SECTION

## BEAUTY IN THE DIFFERENCES

~PREETHA BALASUBRAMANIAM

ELECTRICAL (SEMVIII)

Observing people had always been my favourite hobby.  
Over the years, I observed that every person is unique in his/her own way.

I would say its a talent if you can manage to make people smile and laugh even though when you are terribly broken from within.

It is an art to create a positive  
vibe when you enter the room even though you were crying yesterday night.  
How beautiful it is when you are able to fool people that you are happy even though  
when you are not!

How amazing it is when you don't bother about being judged  
because what matters to you is your Happiness.

Making HAPPINESS as your priority!  
How wonderful it is when you find great joy in helping people whether  
known or unknown!

How incredible it is when a person has the habit of only giving  
and not asking anything in return!

How unbelievable it is to see a person who loves  
to do everything perfectly and truly in an amazing way, inspite of having  
insecurities and mood swings!

It was really surprising to see people who had  
innumerable talents but were still down to earth.

The confused yet the luckier ones.  
The shy yet having a powerful and amazing voice.  
The innocent yet the brave woman.  
The lady who is no less than a man.  
The introvert trying hard to beat his social awkwardness.  
The simplest yet is the highlight of all time.  
The beautiful soul who is a master in the art of flattering.  
So, as you see how beautifully every human nature has been crafted by God.

It just takes the right eyes to see them.  
We all have strengths and weakness.

A good side and a bad side.  
The beauty is in looking for the positive side of people and learning from them, so  
learn to appreciate the goodness in people.  
Imagine someone coming and telling you that "A particular quality which you have  
is amazing and this is something which makes you different from the rest."

This might seem little crazy, but its obvious that you will smile when such thing  
happens with you, and it would immediately boost yourself confidence giving a  
good feeling about yourself.

Isn't that feeling worth a million dollars?  
So why wait for someone to create the change?  
Lets start with you.

Go out and make someone's day.  
Remember, next time when you find something beautiful about a person.  
Don't forget to appreciate them.

Because it is the differences which makes us beautiful!  
*When you see something beautiful in someone, tell them. It may take seconds to say, but  
for them, it could last a lifetime.*



# PLACEMENTS

Sr	Name of the student	Name of the company
1	Agnel Fernando	Burns & MC Doneell Engg Pvt Ltd
2	Ajinkya Patil	Infosys
3	Ashish Patil	Godrej
4	Atharva Bodhe	TCS Ninja
5	Darshan Kocharekar	TCS Ninja
6	Dhrishya Gigi	Burns & MC Doneell Engg Pvt Ltd
7	Kunal Mahadik	Primetals Technologies
8	Lokesh Nagar	TCS Ninja
9	Manthan Mahajan	Godrej
10	Samiran Patil	Primetals Technologies
11	Saud Shaikh	Infosys
12	Saurabh Pardhe	TCS Ninja
13	Saurabh Shelke	Thyssenkrupp Industrial Solutions
14	Shaikh Nauman	Thyssenkrupp Industrial Solutions
15	Shivam Maurya	Burns & MC Doneell Engg Pvt Ltd

<b>Sr</b>	<b>Name of the student</b>	<b>Name of the company</b>
16	Soumyadeep Nandi	TCS Ninja
17	Suyash Mukadam	Thyssenkrupp Industrial Solutions
18	Tanmay Kadam	Burns & MC Doneell Engg Pvt Ltd
19	Tejas Deshpande	Burns & MC Doneell Engg Pvt Ltd
20	Utkarsh Mishra	Infosys
21	Varun Patil	Infosys
22	Samuel Wood	Voltas
23	Sumit Mhatre	Voltas
24	Kirti Mhamunkar	RDC concrete
25	Jenny Geneev	Square Yards
26	Priyanka Jagtap	Square Yards
27	Srushti Narkhede	VideoJet Technology
28	Rasika Dhandagavhal	VideoJet Technology
29	Ansari Mahedin Husain Maqbool	Capgemini
30	Alisha Kerubhau Walunj	Kloudq
31	Kelvin Shabu	Kloudq
32	Rinaldo Royan	Voltas



# ELECTRICAL ENGINEERING STUDENTS ASSOCIATION(EESA)

Convener



**Mrs. Harshada Bhosale**


## Committee Members:

Post	Name
Chairperson	Rahul Kalva
Secretary	Vivek Kushwaha
Ast. Secretary	Swapnali Bhosale
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Editor	Sanmitra Mandal Amol Pednekar
Program Co-ordinators	Anvesh Rane Siddhi Bansode Anjan Panigrahy Hemant Patil Nishil Lathia Tanay Mistry Mansi Lohote Shruti Ghodke Tejas Joshi Vaishakh Menon

# ESSA COUNCIL 2019-2020



Scintilla: Means atom where in atom is our department and consists of students and faculties which makes our department complete similar to electrons and protons in an atom



**The Institution of Engineers  
(India)**

**Students' Chapter (Electrical)**

**Fr. C. Rodrigues Institute of Technology**  
Agnel Technical Education Complex  
Vashi

# IEI

## NEWSLETTER

2019-20

### *About Institute*

Fr. C.R.I.T. has, within a short span of time, established itself as a leading engineering college in Mumbai University. Though its reputation rests mainly on the high quality, value-based technical education that it imparts, it has to its credit a verdant, well-maintained Campus and extensive facilities. Its location in the vicinity of the holy places of various religious denominations underscores its secular credentials and its philosophy of "Vasudhaiva Kuttumbakam". The college prides on being one of few that has received accreditations for all five branches vide file no.28 - 41 / 2010 - NBA dated 18. 12. 2018.



### *About Department*

Electricity has been a subject of scientific interest since at least the 17th century and hence is considered as one of the oldest branches of engineering. The students are taught to design, analyze, implement, and operate electrical and electronics systems efficiently, thus opening the doors to new challenges. In this aspect the students are given in-depth knowledge in Machines, Power Systems, Control System, Signal Processing, Drives, Power Electronics, Microprocessors and Switched Mode Power Supplies. To impart this, we have well qualified experienced and dedicated staff in the department. Moreover, students have access to well-equipped labs such as Renewable Energy Lab and Project Lab for sharpening the mind of the students with practical knowledge.

The department Vision and Mission are:

#### *Department Vision:*

To evolve as a progressive center for modern technical education in the field of Electrical Engineering to produce self-sustainable professionals through value-based education.

#### *Department Mission:*

- To provide modern technical education in Electrical Engineering.
- To collaborate with industries and institutes of repute to grow progressively.
- To provide holistic environment for the development of socially responsible citizens.

### **Program Educational Objectives (PEO):**

Graduates will be able to...

- Demonstrate core competency in the areas of power system, power electronics, machines, renewable energy, and allied disciplines
- Contribute to environmental sustainability through design, development and commissioning of green energy or clean energy systems
- Excel in professional career and higher education with ethical values.

### **Program Specific Outcomes (PSO):**

Graduates will be able to...

- Comprehend and analyze the problems in power generation, transmission and distribution systems.
- Acquire technical knowledge, skill and competency in Development of Renewable energy system and contribute to energy efficiency

### **About IEI**

The Institution of Engineers (India) [IEI] is a statutory body to promote and advance the engineering and

technology, established in 1920 and incorporated by Royal Charter in 1935. It is the largest multi-disciplinary professional body of engineers encompassing 15 (fifteen) engineering disciplines with a membership of more than 820 thousand and serving the nation for more than 9 decades. All the students of electrical department are members of the IEI students' chapter. From the second-year students four members were selected as the council members for the academic year 2019-20. The duration of the council is for one year.

Under IEI the following events were conducted for academic year 2019-2020.

#### **IEI EVENTS 2019-20**

- Mini project competition
- Technical Quiz Competition
- Expert Lectures
- Webinar

#### **1. Mini Project Competition:**

- ❖ An intradepartmental mini project competition was held on 3/08/2019 for 5<sup>th</sup> semester students.
- ❖ 18 groups of 4 members each participated in the competition.
- ❖ The groups were judged by Mr. Ramchandra Bhosale, IIT, Bombay.
- ❖ A cash prize of 3000/- for first winners, 2000/- for the second winners and 1000/- for third winners were

awarded along with the certificates.

List of Winners are: -

Name of Students	Title of Project	Remark
PADIR RUSHIKESH A.	Two Wheeled self-balancing Robot Using Arduino	1 <sup>st</sup> Prize
PANIGRAHY ANJAN A.		
PATIL HEMANT R.		
PATIL RUCHIT		
KHAPNE SUKANYA RAMESH	Office Light Sensor	2 <sup>nd</sup> Prize
LATHIA NISHIL PRAFUL		
PARAB KRUNAL ARUN		
PHADALE AMRUTA DILIP		
NARKAR DEEPESH D.	Smart Garden	2 <sup>nd</sup> Prize
SASE MANDAR N.		
SHASTRI JITESH Y.		
SHIRUDE AJINKYA G.		
CHIDRAWAR VAIBHAV	Transmission line fault detection using Arduino	3 <sup>rd</sup> Prize
BANKAR PRASAD ROHIDAS		
NALAVADE AMITKUMAR BALASO		
POTDAR MAHESH DEVENDRA		
BANSODE SIDDHI S.		
KALVA RAHUL S.	Digital Taxi Fare Meter Using Arduino	3 <sup>rd</sup> Prize
MANDAL SANMITRA		
MISHRA SWAPNIKA		





**Mini project winners**

**2. Technical Quiz Competition**

The IEI students’ chapter organized Quiz Competition on 21<sup>st</sup> and 23<sup>rd</sup> January 2020 for students of second, third and final year electrical engineering. First round was conducted on 21<sup>st</sup> January, in which total 17 students participated. First round of QUIZ was a pen and paper test of 30

Marks. After first evaluation, 12 students were shortlisted, and 4 teams were made for final round. The final round was conducted on 23<sup>rd</sup> January 2020. It was question and answer round and questions were based on General Knowledge, Politics, Science, Current Affairs etc. After final round; one winner and one runner up team was announced.



**3. Expert Lectures**

The students of FCRIT were guided by experts on various topics. Around 15 expert lectures were conducted by the electrical department for students of semester VII, V and III by experts from different fields in 2019 - 2020. The lectures were on various topics related to the subjects that the students’ study as well as on general essential topics. The lectures conducted are as follows:

1	25/9/2019	Mrs. Shraddha Aniket Sawant Assistant Professor AIKTC, Plot No 2, 3, Sector 16, New Panvel, Navi Mumbai - 410206	Vector Control of Induction Motor
2	13/9/2019	Mr. Pravin Ambhore, Director Electrocust, Kharghar, Navi Mumbai	Motivational Talk
3	25/9/2019	Mrs. Shilpa Vivek Pillai Deputy Executive Engineer 220/33-22kV substation, MSETCL, Nerul, Navi Mumbai	Substation Equipment and Its Maintenance
4	13/7/2019	Mr. Taresh Varshney DGM L&T	Motivational Talk

5	30/9/19	Mr. Gokul Prakash CEO, Lamberton Power Private Limited, Mumbai	Power Transformer Erection, Testing and Commission
6	5/10/19	Ms. Mayuri Bhirud Graduate Trainee Engineer Worley Airoli	Selection of Projects for Final Year
7	12/9/19	Mr. Ram Bhosale Research Scholar, EE, IIT Bombay Mumbai	Selection of Semiconductor Devices based on application
8	5/10/19	Mr. Saurabh Killekar Graduate Engineer Trainee Sterling and Wilson Pvt. Ltd. Mumbai 400043	Co-Generation
9	11/9/19	Ms. Shambhavi Sant Assistant System Engineer Tata Consultancy Services Thane, Mumbai	JAVA AWT
10	28/2/20	SutejMota GET, Burns and MacDONNELL	High Voltage Pulse Generation for hipot test
11	21/1/20	Mayuri Bhirud GET JACOBS INDIA ECR	Introduction to Protection and Switchgear Engineering
12	06/1/20	Shashank	Motivational Talk

		Desai Residential and Commercial Solar Energies	
13	09/1/20	Aditya Vaidya Area Sales Manager Kirloskar Oil Engines Limited, Pune	Opportunities for Engineers in Sales and Marketing
14	24/1/20	Siddharth Singh Deputy Manager Reliance Jio	Power Distribution Systems in Telecom Industry
15	28/2/20	SutejMota GET, Burns and MacDONNELL	Applications of Network Theorems

#### 4. IEI Webinar

Webinar on topic, “**Holistic Power Quality Management**” was organized by IEI-Students chapter of Electrical Department on 13<sup>th</sup> June 2020. The session was addressed by **Dr. B. E. Kushare**, Certified Energy Auditor and Power Quality Consultant. Total 60 students and faculties from Electrical Engineering branch attended the webinar. Quiz was conducted at the end of webinar and participation certificates were given to attendees who scored 40% or more in the Quiz.

#### Other development/achievements in department



**Lecture by Aditya Vaidya**



**Lecture by Siddharth Singh**

1. **Dr. Sushil Thale** from department elected as Chairman Board of Studies in Electrical Engineering in Mumbai University in 2019-2020.
2. Two students from third and final year engineering received IEI Scholarship of total amount Rs. 20000/- for year 2019-2020.
3. **Dr. Mahendra Rane**, awarded PhD degree from VJTI.
4. **Best Project Award at IEI (Belapur Local Chapter) Silver Jubilee Prize distribution ceremony on 28<sup>th</sup> Feb 2020**
  1. **Project Title: Design**

*and Development of  
wide bandwidth  
power quality  
analyzer.*

**Project Group Members:**

*Aboh Ngocha, Anish  
Kanse, Ashutosh Kavitkar,  
Kunal Kulkarni*

**Project Guide:**

*Prof.(Dr.) SushilThale*



2. **Project Title:**  
*Remote online  
monitoring of  
electric machine  
using IoT.*

**Project Group**

**Members:** *MohitPatil,  
MohitPatle, Pranav  
Kulkarni, SharunShibi*

**Project Guide:**

*Mrs. Rashmi Kale*



**IEI COMMITTEE**

The committee for the year 2019-20:



**Chairperson:**  
*Ayush Misra*



**Secretary:**  
*Raheel  
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