

# REDEEM

*Quarterly Newsletter*

*Electrical & Electronics Engineering Department*

*SSN College of Engineering*



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objects

FDP  
Report

Find out how face ID  
works

## FROM THE HOD'S DESK

Department of Electrical and Electronics Engineering strives to achieve excellence in teaching, research and development activities along with professional societies such as ISTE and IEEE.

Faculty development is an important ingredient of a successful academic department. Our department periodically arranges faculty development programme every academic year. I appreciate efforts taken by Dr. R. Seyezhai, Dr. R. Ramaprabha and Dr. M. Balaji in organizing AICTE sponsored 2 week faculty development programme on the topic "POWER CONVERTERS , CONTROL AND GRID INTEGRATION OF RENEWABLE ENERGY SOURCES".

I congratulate the UG and PG students who have been awarded with 31 internally funded projects (UG: 24 and PG: 07).

Congratulations to Dr.V.Rajini and Dr.R.Ramaprabha, for receiving Travel Grant from DST SERB and CSIR for attending International Conferences at California and Hawaii, Honolulu respectively.

Congratulations to Dr.V.Rajini for being appointed as a coordinator along with Dr.S.Radha, HOD/ECE, for the center of smart technology.

I congratulate Dr N B Muthuselvan for receiving "Innovative Technological Scientific Research & Dedicated Professor Award" by Innovative Scientific Professional Research Malaysia (ISRPM) – 2017.

Also, I congratulate Dr.R.Seyezhai and Mr.A.Bharathi sankar, reserarch scholar for receiving recognition for the publication of article about the work on Solar powered electric car carried out by was published in THE HINDU ( Supplement : Down Town) on 20.10.17.

We feel a sense of pride when our students are being recognized for their achievements. Kubera Murthi M, Sriram S, Vikram AS, Vignesh R , Sakthi Ganesh M and Kishor Sabarish of second year, won First prize in ' INTECHO'18; LINE FOLLOWER' event organized by Madras Institute Of Technology, Anna University. The students were mentored by Dr. M.Senthil Kumaran.

I express my sincere thanks and appreciation to everyone who have contributed to the growth and reputation of our department.

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# PREFACE

Happy New Year to all the readers.

Every individual wants peace of mind. But it is hard to find a person who can say that he has attained such a state of mental equilibrium as will allow him to live a life of tranquillity. Peace of mind is a distant dream for all of us. The reason is that people hanker after ideal peace, that is, pure peace—a peace that is free from all kinds of non-peace items.

But this kind of absolute peace is not in nature's storehouse. Let us take the analogy of the rose. A rose is a very beautiful flower, but every stem has its thorns. Indeed, thorns are an integral part of the rose plant. Thorns serve as security guards for the flower. So flowers have to be accompanied by thorns. There must be hard thorns along with soft flowers—that is, there must be non-peace items along with peaceful items.

A peaceful mind is a very precious aspect of human nature and it too needs safety to maintain its sublime quality. Psychology says that an untroubled mind very soon becomes stagnant. It loses its creativity. For this reason, nature always leads people into challenging situations. It is a non-peace item which acts as a challenge for the mind. This guarantees that the creativity of a peaceful mind never comes to an end. A creative mind is always alive. It is a common phenomenon that one who is born in affluence and has a problem-free life, very soon finds his mind becoming dull, while the one, who is born into a life of problems and hardship, has an active mind. Such a person develops creative thinking and his intellectual development continues unhindered. The human mind needs constant challenges. In the environment of challenge, it continues to grow till it becomes a super mind.

On the other hand, in an environment where there is no challenge, the human mind becomes like a stunted plant and gradually, it shrivels away into a state of underdevelopment. Peace is not a ready-made item. It is a self-managed item. One should be intelligent enough to develop one's mind along positive lines so that one may deal effectively with unwanted situations. A peaceful mind is only the other name of a positive mind. It is not ease, but effort, not facility but difficulty that makes a man. It is a fact that eases and facility is constant obstacles to Intellectual development, while effort and difficulties are like stepping-stones to the sharpening of the intellect. Success is in the effort but not in the result. Character is built on turbulences of life. It is not about how you behave in comfort and conveniences but it is about how you behave in challenging and hard circumstances.

“To be yourself in a world that is constantly trying to make you something is else... is the greatest achievement”. Ralph Waldo Emerson

## HONOURS

Dr.R.Ramaprabha, ASSP/EEE received Travel Grant of Rs. 30,000/- from CSIR under CSIR Foreign Partial Finance Assistance for attending International Conference at Hawaii, Honolulu during Dec 12-15, 2017 on 01.10.2017.

Dr.V.Rajini, Prof/EEE received the letter of sanction - travel grant from DST SERB to attend the international conference on renewable energy and its research applications 2017 ICRERA17 to be conducted at California, USA during 5-8 November 2017 on 06.10.2017.

Dr.V.Rajini, Prof/EEE acted as panel member for patent scrutiny committee and Dr.R.Seyezhai, ASSP/EEE attended the patent meeting held at SSNCE and four applications were scrutinized on 17.10.2017.

The article about the work on Solar powered electric car carried out by Dr.R.Seyezhai, ASSP/EEE and Mr.A.Bharathi sankar was published in THE HINDU ( Supplement : Down Town) on 20.10.17.

Dr N B Muthuselvan ASSP/EEE Received, "Innovative Technological Scientific Research & Dedicated Professor Award" by Innovative Scientific Professional Research Malaysia (ISRPM) – 2017 on 22.10.2017.

Dr.R.Ramaprabha, ASSP/EEE received the letter of sanction - Travel Grant from DST SERB to attend the international conference PEDS 2017 to be conducted at Hawaii, Honolulu during Dec 12-15, 2017 on 01.11.2017.

Dr.U.Shajith Ali, ASSP/EEE has been appointed as a National Advisory Board member in 4th International Conference on Chip, Circuitry, Current, Coding, Combustion & Composites held at Sri Sairam College of Engineering, Anekal, Bengaluru, 16-17 November 2017 on 02.11.2017.

Dr.V.Rajini, Prof/EEE attended the meeting with the president/SSNI regarding the center of smart technology.

Dr.V.Rajini, Prof/EEE and the Dr.S.Radha are the coordinators of the center of smart technology on 01.12.2017.

Dr Ranganath Muthu, Prof/EEE attended a Program Assessment Committee meeting for B.E. EEE at Velammal Engineering College on 05.12.2017.

Dr.V.Rajini, Prof/EEE and Dr. K.Vijaysekar submitted the data for NIRF 18 ranking in the NIRF portal on 06.12.2017.

Dr.V.Rajini, Prof/EEE is appointed as reviewer for International Conference on New Trends in Engineering & Technology (ICNTET-2018)" during 23<sup>rd</sup> and 24<sup>th</sup> of March 2018 on 08.12.2017.

Dr.P.Saravanan, ASSP/EEE acted as an auditor for the evaluation process at Rajalakshmi Engineering College (Autonomous Institution) on 12.12.2017.



## PAPER PUBLICATIONS

M.Joly and Dr.R.Ramaprabha ASSP/EEE, published a paper titled “Design of Battery less Hybrid PV System for DC Distribution System in Building Applications with Improved Transient Response”, Journal of Electrical Engineering (ISSN 1582-4594), Vol. 17, No. 3, pp. 384-391, Sep 2017. Scopus Index 0.16. (Listed in AU Annexure 1) on 01.10.2017.

Dr.R.Seyezhai, ASSP/EEE and S.T.Namitha Shanili (passed out PG Student) , “A Review of Multi-Input DC-DC Converter Topologies for DC Micro Grid”, International Journal of Control Theory and Applications, Vol.10, No: 29,2017. (Scopus Indexed) on 03.10.2017.

Dr.R.Seyezhai, ASSP/EEE and R.Mahalakshmi (passed out PG Student) , “Design and Simulation of an Integrated PFC AC-DC Converter for Telecoms”, International Journal of Control Theory and Applications, Vol.10, No: 29,2017. (Scopus Indexed) on 03.10.2017.

Dr.R.Seyezhai, ASSP/EEE and N.Hemalatha (Full-time scholar) published a paper titled, “A Single Stage Power Conditioning of Extended Boost Quasi Z-Source Inverter for PV Applications”, Journal of Electrical Engineering, Vol.3, 2017. ( AU Annexure-1 & Indexed in Thomson Reuters) on 10.10.2017.

Dr.R.Seyezhai, ASSP/EEE and V.Chamundeeswari (part-time scholar) published a paper titled, “PSO-PID Maximum Power Point tracking controller using Modified Superlift Luo Converter”, Energy Procedia, 117, 2017, pp.87-94.(Scopus Indexed) on 10.10.2017.

Dr.R.Deepalaxmi , ASSP/EEE, D.Janani , B.Kaviya, Manisha V Bachpai and M.Durgai Vadivu (Passed out BE/EEE students) published a paper titled PAPER ID : V2S10\_348 “Modelling and Implementation of Long Duration Impulse Current Measurement Circuit” in International Journal of Advance Scientific Research and Management IJASRM Volume 2,Issue 10, PP. 34-40, October 2017. IF-3 ISSN [ONLINE] : 2455-6378 on 24.10.2017.

Dr.S.Malathy and Dr.R.Ramaprabha, published a paper titled “Reconfiguration strategies to extract maximum power from photovoltaic array under partially shaded conditions”, International Journal on Renewable & Sustainable Energy Reviews (ISSN 1364-0321), Vol. 81, pp. 2922-2934, 2018. (DOI: <http://dx.doi.org/10.1016/j.rser.2017.06.100>), Scopus Index 3.12, Thomson Reuters Impact factor : 9.122 – Available online on 15.11.2017.

Dr.R.Seyezhai, ASSP/EEE and V.Chamundeeswari (part-time research scholar) published a paper titled, “ PSO-PID maximum power point tracking controller using modified superlift Luo Converter”, Energy Procedia,, 2017, pp.87-94 on 15.11.2017.

Dr.P.Saravanan, ASSP/EEE published a paper titled, “Image coding using Cellular Automata based LDPC codes”, in International Journal of Computer Science and Network Security, Vol.17 No.11, pp. 146-150, 2017, (Thomson Reuters) on 15.12.2017.

Dr.A.Bharathi sankar & Dr.R.Seyezhai, ASSP/EEE, published a paper titled, “ Implementation of Solar based Electric Vehicle International Journal of Engineering Research in Electrical and Electronic Engineering Volume-4 ,November 2017 ISSN (Online) 2395-2717 on 21.12.2017.

V.K.Vishwak (passed out PG) & Dr.R.Seyezhai, ASSP/EEE published a paper titled, “ Design and Simulation of Superlift DC-DC Converter for Solar PV Applications International Journal of Advances in Computer and Electronics Engineering Volume 2, Issue 9, September 2017, pp. 22–28 ISSN: 2456 – 3935 on 21.12.2017.

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## PAPER PRESENTATION

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Dr.Mrunal Deshpande, ASSP/EEE , Dr.Senthil Kumaran, ASSP/EEE and Dr.Ranganath Muthu, Prof/EEE, presented a paper titled “FPGA based direct three level matrix converter” 8<sup>th</sup> International Conference on engineering technology, science and Management Innovation (ICETSMI 2017), IETE Janakpuri, New Delhi 17.09.2017.

Dr.R.Seyezhai, ASSP/EEE and V.Chamundeeswari, (part-time scholar) presented their work before the patent committee for filing a patent titled, “ Modified Luo Converter for Data Transmission” at SSNCE on 17.10.2017.

Dr.R.Seyezhai, ASSP/EEE presented her research work in Energy Researchers meet at SSRC on 31.10.2017.

Dr.R.Ramaprabha, ASSP/EEE has presented her research activities and roadmap on 31.10.2017 at SSN Research center in Energy Researchers meeting.

Dr.R.Seyezhai, ASSP/EEE and D.Umarani, AP/EEE have presented a paper entitled “Study and Analysis of Performance Degradation of PV based Quasi Z-Source Inverter” in the 15<sup>th</sup> International Conference on Science , Engineering and Technology (SET – 2017) organized by VIT, Vellore on 06.11.2017 and 07.11.2017.

Dr.R.Seyezhai, ASSP/EEE and A.Bharathi sankar ( Research associate, ARCP) presented a paper entitled “Hybrid Powered Electric Bicycle based Super capacitor/Battery ” in the 15<sup>th</sup> International Conference on Science , Engineering and Technology (SET – 2017) organized by VIT, Vellore on 06.11.2017 and 07.11.2017.

Dr.R.Seyezhai, ASSP/EEE and S.Harika ( Research Assistant) presented a paper entitled “High gain DC-DC converters for PV applications ” in the 15<sup>th</sup> International Conference on Science , Engineering and Technology (SET – 2017) organized by VIT, Vellore on 06.11.2017 and 07.11.2017.

Dr.R.Seyezhai, ASSP/EEE and N.Hemalatha( Research Scholar) presented a paper entitled “Analysis And Simulation Of Control Strategies For Modified Capacitor Assisted Extended Boost Quasi ZSI ” in the 15<sup>th</sup> International Conference on Science , Engineering and Technology (SET – 2017) organized by VIT, Vellore on 06.11.2017 and 07.11.2017.

Dr.R.Seyezhai, ASSP/EEE, D.Umarani, AP/EEE and S.Dhivya (Senior Engineer, Tata Elxsi) have presented a paper entitled “Evaluation of Modulation Strategies for Single-Phase Quasi Z-Source Inverter” in the 33<sup>rd</sup> National Convention of Electrical Engineers 2017(NCEE-2017) & National Conference on ‘Hybrid AC/DC Power Systems for Effective Utilization of Renewable Energy’ at NIT, Trichy and Won best paper award on 24.11.2017 and 25.11.2017.

Dr.R.Seyezhai, ASSP/EEE and D.Umarani, AP/EEE presented a paper entitled “Reliability Study and Performance Analysis of Two-Phase Interleaved Boost Converter” in the 5th International conference on Advances in Engineering Research (ICAER-2017) organized by Indian Institute of Technology Bombay, Powai from 12.12.2017 to 14.12.2017.

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## PROJECT WORK

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D. Kavim, B. Arun Prashaath and K. Agil (IV year UG Students) under the guidance of Dr.R. Ramaprabha, ASSP/EEE presented their progress in a review meeting of the internally funded projects being carried out in the Innovation Centre in the presence of Dr.Idichandy, Chief mentor, SSN Innovation Centre at Innovation Center on 05.10.2017.

The progress of the internally funded student project titled, "Curve Tracer for PV Panels using weighted Resistive Network" guided by Dr.S.Malathy, ASSP/EEE was presented at the innovation centre by the student members S. Priyadarshini, K.S. Swathisree and S.Swathi on 05.10.2017.

Five student batches (ug &pg) under the guidance of Dr.R.Seyezhai, ASSP/EEE presented their project proposal for internal funding at SSNCE on 12.10.2017.

7 student batches - Ms.M.Suvetha (II. M. E. PED), Ms.U.Kavitha (II. M. E. PED), Ms.T.Kripalakshmi (II. M. E. PED), II Year B. E. EEE batch consists of Ms. M.Aishwarya, Ms. N.Divyasri & Ms.S.J. Indhra Pooja, II year B.E. EEE batch consists of Mr.S.Dev Ganesh, Mr.R.Abinandhan & Mr.R. Adithya Pillai; III Year B.E. EEE batch consists of Mr. G. Guru Naresh, Mr. M. Jagadeeshvar & Mr. M. Bharath Reddy, III year B.E. EEE batch consists of Mr.L.Deepak, Mr.R.R.Hari Prasath & Mr.S.Dhilip presented their project proposals for SSN Student project internal funding on 12.10.2017 under the guidance of Dr.R.Ramaprabha, ASSP/EEE.

Four teams from second year EEE and third year EEE presented their project proposal under the IFSP-2017 scheme on 12.10.2017. The Projects are guided by Dr.S.Malathy, ASSP/EEE.

Dr.V.Kamaraj, Dr.V.Rajini & Dr.R.Seyezhai conducted the final review for II Year M.E. (PED) for phase-1 project work on 19.10.2017.

Internal faculty funding for the project titled “Identification of Cable Insulation Material for Nuclear Power Plants” has been sanctioned for Dr.R.Deepalaxmi, ASSP/EEE and Dr.V.Rajini, Prof/EEE for two years on 22.11.2017.

Three numbers of I Year M.E. PED students submitted their project proposals for SSN Student project internal funding on 01.12.2017 under the guidance of Dr. R. Ramaprabha, ASSP/EEE. The students are, Mr. N. S. Kabilan, Ms. S. Sangeetha and Ms. Anjana Ethirajan.

Mr.V.Thiyagarajan, AP/EEE, received an internal fund of amount Rs. 2.20 Lakh from SSN Trust for the project titled, "Design and development of modified multilevel inverter topology with reduced number of switches" on 14.12.2017.

K.Dhivakar (III Year) and T.Dinesh (II Year), under the guidance of Mr.V.Thiyagarajan, AP/EEE, received an internal fund of amount Rs. 16,000/- from SSN Trust for the project titled "New multilevel inverter with reduced number of switches" on 14.12.2017.

The following 2 student projects have been sanctioned (SSN student project funding) under the guidance of Dr. R. Ramaprabha (ASSP/EEE) for the year 2017:

II Year ME (PED) - Ms. T.Kripalakshmi -Wireless Power Transfer for Electric Vehicle charging applications (Rs. 25,000/-)

II Year EEE - Ms.M.Aishwarya, Ms.N.Divyasri & Ms.S.J.Indhra Pooja Solar powered trash compactor (Rs. 25,000/-)

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## WORKSHOPS ATTENDED

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Ms.Alagu Dheeraj, AP/EEE attended three day National Workshop on Power Electronics (NWPE 2017) on "Strengthening Grid Energy Storage through Power Electronics-Challenges and Research opportunities", organized by Hydro Power Simulation Laboratories, Department of Water Resources and Management at Indian Institute of Technology, Roorkee, Under aegis of NaMPET an initiative of Ministry of Electronics and Information Technology (MeitY, Govt. of India), GoI Nodal Center-CDAC, Trivandrum during 09.10.2017 to 11.10.2017.

Dr.N.B.Muthuselvan, ASSP/EEE Attended a 7 days FDTP program on, "EE6002 Power System Transients", from 4-12-2017 to 11-12-2017, conducted by College of Engineering Guindy (CEG), Anna University, Chennai.

Dr.Devesh Raj, ASSP/EEE participated in the Anna University sponsored Faculty Development Training Programme on EE6002 - Power System Transients at Dept. of EEE, College of Engineering, Anna University, Chennai from 04.12.2017 to 11.12.2017.

Ms.S.Krishnaveni, AP/EEE participated a one day workshop on "The art of doing research" organized by MAIDEE- Anna university on 9.12.2017.

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## GUEST LECTURE

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Dr.U.Shajith Ali, ASSP/EEE. delivered a lecture on "Z-source Inverters for Renewable Energy Systems" in the AICTE sponsored two week faculty development programme on Power Converters, Control & Grid Integration of Renewable Energy Sources during November 15-29, 2017 at SSN College of Engineering.



Dr .Devesh Raj, ASSP/EEE delivered a lecture on "Introduction to AC circuits, Waveforms and RMS value, Power and Power factor", in Anna University sponsored FDP for Basic Electricals Electronics and Instrumentation organized in Velammal Institute of Technology on 02.12.2017.

Dr.N.B.Muthuselvan, ASSP/EEE conducted a Hands on training in, "Power System Analysis using Power World Simulator" on 04-12-2017 during the AICTE Sponsored Two week FDP on Analysis of Power System Protection and Automation organized by KCG College of Technology, Karapakkam

Dr.R.Seyezhai, ASSP/EEE delivered two Lectures on , “Modeling of PEM fuel cells” and “Design of DC-DC converters for fuel cells” in the AICTE sponsored Faculty Development program on , Clean Energy technologies for smart grid at Pondicherry Engineering College, Pondicherry on 15.12.2017.

Dr.R.Ramaprabha, ASSP/EEE delivered invited lecture in an AICTE sponsored two week faculty development programme on “Smart Grid and Clean Energy Technologies (SGCET)” conducted during Dec 11- Dec 22, 2017 at Pondicherry Engineering College, Pondicherry.

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## PHD

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Dr.V.Kamaraj, Dr.V.Rajini & Dr.R.Seyezhai conducted the second review for II Year M.E. (PED) for phase-1 project work on 11.10.2017.

Thesis report in respect of Ph.D scholar K.J.Anoop of Dr.V.Rajini was received and DC meeting was conducted to recommend oral examination panel for Ph.D defense meet on 14.10.2017.

Viva voce examination conducted for K.J.Anoop , part time research scholar of Dr.V.Rajini on 25.10.2017.

Dr.R.Seyezhai, ASSP/EEE conducted the viva-voce examination for her part-time scholar Ms.V.Chamundeeswari at SSNCE.The scholar defended her thesis titled, “ Investigation of Modified Negative Output Superlift Luo Converter” on 27.10.2017.

Dr.R.Seyezhai, ASSP/EEE attended the doctoral committee meeting for the scholar Mr.Nanda Gopal at SSNCE on 24.11.2017.

Dr.R.Ramaprabha, ASSP/EEE attended a Comprehension Viva –Voce meeting for PhD Candidate of EEE department at SRM University, Chennai on 27.11.2017.

Mr.T.Tamizhselvan research scholar under the guidance of Dr.R.Seyezhai submitted his Ph.D thesis on 29.11.2017.

Part time scholar Mr.W.A.Augusteen, successfully defended his thesis titled "A Bio-Inspired Capra Optimization Technique for Economic Dispatch Problem Incorporating Wind Energy System", under the guidance of Dr.R.Rengaraj, ASSP/EEE on 01.12.2017.

The following full-time PhD scholars under the guidance of Dr.R.Ramaprabha, ASSP/EEE presented their papers in SSN Doctorate Scholars Day held on 01.12.2017.

Ms.M.Vijayalakshmi presented the paper titled "DC Microgrid Power Management System" –Oral presentation.

Ms.S.P.Chitra presented the paper titled "Modelling of Standalone Modular Interactive Photovoltaic system" –Poster presentation

Ms.K.R.Shanmuga Vadivu presented the paper titled "Single-Stage Multilevel Type Full Bridge Converter for Low Power Applications" –Poster presentation

Dr.R.Seyezhai, ASSP/EEE conducted the synopsis meeting for the research scholar Ms.A.Inba Rexy at SSNCE on 13.12.2017.

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## OTHER ACTIVITIES

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Dr.U.Shajith Ali ASSP/EEE, Dr.S.Malathy ASSP/EEE & Mr.V.Thiyagarajan AP/EEE, applied to CSIR, DST,MNRE, DRDO and IEEE for possible financial support towards the conduct of 4<sup>th</sup> International Conference on Electrical Energy Systems (ICEES 2018) which is to be held during 7-9, February 2018 on 05.10.2017.

Dr.R.Deepalaxmi , Asso.Prof/EEE reviewed the manuscript entitled " ID PST-2017-0355 Dynamic Characteristics of Charging Effects on Dielectric Constant due to E-beam Irradiation: A Numerical Simulation" for Plasma Science and Technology on 20.10.2017.

Dr. R. Ramaprabha, ASSP./EEE reviewed papers for IEEE IES IESES18, International Journal of Power Electronics (IJPELEC), IJCTA review & IET-Renewable Power Generation in the month Oct 2017 on 25.10.2017.

Dr.R.Seyezhai, ASSP/EEE acted as external examiner for the ME. (PED) phase-1 viva-voce at Anna University, Chennai.

Dr.R.Seyezhai, ASSP/EEE visited FBTR & EID sections at IGCAR, Kalpakkam on 28.11.2017.

Prem kartik, ME PED student joined as research assistant with Dr.V.Rajini Prof/EEE on 06.12.2017.

Six students from Final yr.EEE & I Yr.M.E (PED) under the guidance of Dr.R.Seyezhai submitted an idea proposal for the SMARTINDIA HACKATHON 2018.

# AICTE SPONSORED 2 WEEK FACULTY DEVELOPMENT PROGRAMME

## POWER CONVERTERS , CONTROL AND GRID INTEGRATION OF RENEWABLE ENERGY SOURCES

Department of EEE Organized “AICTE Sponsored Two Week Faculty Development Programme on “Power Converters, Control and Grid Integration of Renewable Energy Sources” during Nov 15-29, 2017. (Approved amount Rs. 3,55,000/-)

Convener: Dr. V. Kamaraj,

Coordinators: Dr. R. Seyezhai, Dr. R. Ramaprabha & Dr. M. Balaji

Number of Participants: 60

Sessions & Speakers: 4 sessions/day @ EEE Seminar Hall/ Simulation Lab

| DATE   | SESSION DETAILS   |
|--------|---|
| Nov 15 | Inauguration<br>Chief guest – Dr. B. Babu, Head, Instrument Development & Services Division, IGCAR, Kalpakkam                         |
|        | Power Electronic Technologies for Fuel Cell Systems – Dr. R. Seyezhai   |
|        | Progress in Solar PV Technology: An Overview – Dr. R. Ramaprabha  |
| Nov 16 | Power Quality: Problems & Solutions using various filter circuits –Dr. Nitin Gupta, Malaviya National Institute of Technology, Jaipur |
|        | Design methodology for Power converter circuit- Dr. Nitin Gupta, Malaviya National Institute of Technology, Jaipur                    |
|        | Voltage Control with Distributed Energy Resources – Dr. M. Balaji   |
| Nov 17 | Modular Multilevel Converters for Solar & Fuel cells – Dr. C. Bharatiraja, SRM University, Chennai                                    |
|        | Inverters for Wind Energy - Dr. A. N. Arvindan  |
|        | Hands-on Session -1:<br>Modeling of PV Systems- Dr. R. Ramaprabha, Dr. P. Saravanan, Dr. S. Malathy & Ms. S. Krishnaveni              |
|        | Silicon Carbide (SiC) Power Devices for Smart grid - Dr. R. Seyezhai  |
| Nov 20 | Design of Matrix Converter for Wind Energy- Dr. V. Jamuna, Jerusalem College of Engineering, Chennai                                  |
|        | Recent Trends in Wind Energy Systems – Dr. Ranganath Muthu  |
|        | Hands-on Session -2 :<br>Simulation of Multilevel Inverter for PV – Dr. K. Murugesan, Dr. J. Anitha Roseline & Mr. R. Leo             |
|        | Integrating Distributed Energy Sources into Smart Grid – Dr. R. Ramaprabha  |
| Nov 21 | Industrial Visit – NIOT, Chennai  |
| Nov 22 | Z-Source Inverters for Renewable Energy Systems – Dr. U. Shajith Ali  |

|        |   |
|--------|---|
| Nov 22 | Challenges in Grid Integration of Wind Power – Dr. P. Somasundaram, Anna University, Chennai  |
|        | Hands-on Session -3 :<br>Modeling of PEM Fuel Cell - Dr. R. Seyezhai, Ms. Alaghu Dheeraj, Mr. V. S. Nagarajan & Ms. D. Umarani                                |
|        | Energy Storage Systems –Dr. S. Chandramohan, Anna University, Chennai   |
| Nov 23 | High Gain Converters for Renewable Energy Systems –Dr. M. Prabhakar, VIT University, Chennai  |
|        | Electrical Drives for Renewable Energy Systems – Dr. V. Kamaraj   |
|        | Demonstration of Solar Powered Electric Vehicle - Dr. R. Seyezhai   |
|        | Modeling of Solar PV & MPPT Techniques – Dr. S. Jeevananthan, Pondicherry Engineering College   |
| Nov 24 | Grid Configuration, Operation and Resilience – Dr. M. Sudhakaran, Pondicherry Engineering College   |
|        | Application of Optimization Techniques to Solar PV- Dr. M. Balaji   |
|        | Design of Neural Network Controllers for Power Converters– Dr. M. Balaji  |
|        | Design of PI & Fuzzy Controllers for DC-DC Converters – Dr. M. Devesh Raj   |
| Nov 27 | Introduction & Demonstration on FPGA Programming - Dr. M. Senthilkumaran & Dr. Mrunal Deshpande   |
|        | Hands-on Session -5 :<br>Simulation of PI controller & FLC for PV Converters – Dr. S. Malathy, Dr. M. Pandikumar & Mr. V. Thiyagarajan                        |
|        | Hands-on Session -6:<br>Simulation of grid connected inverters– Dr. S. Malathy, Dr. M. Pandikumar & Mr. V. Thiyagarajan                                       |
|        | Industrial visit-IGCAR, Kalpakkam   |
| Nov 28 | Energy Management Studies –Dr. N. B. Muthuselvan, SSNCE   |
| Nov 29 | Modulation Strategies for Quasi Z-source Multilevel Inverters –Dr. R. Seyezhai  |
|        | Panel Discussion on Recent Trends in Solar PV Systems<br>Dr. V. Kamaraj & Dr. R. Velraj, The Director (Institute of Energy Studies), Anna University, Chennai |
|        | Presentation & Feedback from Participants   |
|        | Valedictory   |





## INTERNALLY FUNDED STUDENT PROJECTS

| <b>No</b> | <b>Name and Year of the Students</b>   | <b>Project Guide(s)</b> | <b>Title of the project</b>   | <b>Duration</b> | <b>Budget and Items Approved</b>   |
|-----------|--|-------------------------|---|-----------------|--|
| 1         | S. V. Kanna<br>H. Akshay Kumar<br>Anand Hari Natarajan                         | Dr. Ranganath Muthu     | Study of imitation learning and implementation in robotic arm   | 1 year          | Budget: Rs.25000<br><br>Items approved<br>1. Electronic and Electrical Components<br>2. Batteries<br>3. Miscellaneous  |
| 2         | M. Aishwarya (II Year)<br>N. Divyasri (II Year)<br>S.J. Indhra Pooja (II Year) | Dr. R. Ramaprabha       | Solar powered compact dustbin   | 1 year          | Budget: Rs.25000<br><br>Items approved<br>1. Mechanical, Electronic and electrical components<br>2. Solar panel<br>3. Miscellaneous  |
| 3         | V. Vignesh (III Year)  | Dr. M. Balaji           | Smart bin - An automatic waste segregating and managing bot   | 1 year          | Budget: Rs.20000<br><br>Items approved<br>1. Electronic and Electrical Components<br>2. Battery<br>3. Fabrication<br>4. Miscellaneous  |
| 4         | M. Harish Babu (III Year)<br>D. Abhijith (III Year)                            | Dr. V. Kamaraj          | Comparison of performance of synchronous reluctance motor with conventional motor drives for conveyor application | 1.5 years       | Budget: Rs.25000<br><br>Items approved<br>1. Belt and Pulley system<br>2. Coupling system, and sensors<br>3. Front end display with interconnections<br>4. Frame<br>5. Miscellaneous |

|   |   |                     |  |           |   |
|---|---|---------------------|--|-----------|---|
| 5 | R. Bharath Kumar (IV Year)<br>S. Narendran (IV Year)<br>P. Praneeth (IV Year)<br>S. Abinav (III Year)       | Dr. V. Kamaraj      | Design and realization of power factor correction and filter circuits for synchronous reluctance motor drive | 1.5 years | Budget: Rs.25000<br><br>Items approved<br>1. Power factor correction circuits<br>2. Filter circuits<br>3. Sensors and accessories<br>4. Control circuit<br>5. Miscellaneous                     |
| 6 | R. Ashwin (III Year)<br>S. Arunan (III Year)<br>U.V. Adhithiya Valavan (III Year)                           | Dr. A.N. Arvandan   | Experimental investigation of multipulse including 36-pulse unidirectional AC-DC converters                  | 19 months | Budget: Rs.25000<br><br>Items approved<br>1. Phase shifting transformers<br>2. Electronic and electrical components.<br>3. Fabrication<br>4. Miscellaneous                                      |
| 7 | R. Vignesh (III Year)<br>S. Manasa (III Year)<br>R. Vignesh (III Year)<br>R. Priyadharshini (III Year)      | Dr. K. Usha         | Method to reduce DC-link capacitance using voltage compensation techniques in a Grid-tie solar inverter      | 1 year    | Budget: Rs.19000<br><br>Items approved<br>1. Electronic and electrical components<br>2. Sensors<br>3. Miscellaneous   |
| 8 | Ramanan Sekar (IV Year)<br>N. Sai Shankar (IV Year)<br>B. Shiva Shankar (IV Year)<br>R.K. Vishal (III Year) | Dr. Ranganath Muthu | Collaboration between unmanned aerial and ground vehicles for search and rescue missions                     | 8 months  | Budget: Rs.25000<br><br>Items approved<br>1. Mobile platform<br>2. Arduino<br>3. Sensor<br>4. Parrot A.R.Drone Power Version 2.0<br>5. Electronic and electrical components<br>6. Miscellaneous |
| 9 | K. Dhivakar (III Year)<br>T. Dinesh (II Year)   | Mr. V. Thiyagarajan | New multilevel inverter with reduced number of switches  | 1 year    | Budget: Rs.16000<br><br>Items approved<br>1. MOSFET<br>2. IGBT<br>3. Optocoupler<br>4. Electronic and electrical components<br>5. Miscellaneous   |

|    |   |                    |   |           |  |
|----|---|--------------------|---|-----------|--|
| 10 | P. T. Nandh Kishore (II Year)<br>K. Murugappan (II Year)<br>N. Kaashyap (II Year)                             | Dr. S. Malathy     | Energy harvesting from passive human power through Piezoelectric stair                    | 1 year    | Budget: Rs. 16000<br><br>Items approved<br>1. Transducers<br>2. Multimeter<br>3. Battery<br>4. Arduino<br>5. Electronic and electrical components<br>6. Miscellaneous                          |
| 11 | A. Babu (III Year)<br>R. Arun Kumar (III Year)<br>S. Anirhudh (III Year)                                      | Mr. V.S. Nagarajan | Performance analysis of PM assisted synchronous reluctance motor for traction application | 1.5 years | Budget: Rs.25000<br><br>Items approved<br>1. Mounting plate with sensors, panel and accessories<br>2. Gear box and wheel arrangement<br>3. Test bed<br>4. Miscellaneous                        |
| 12 | R. Jyothiraditya (III Year)<br>Tharun Kumar (III Year)<br>Rishi Anand (III Year)                              | Dr. M. Balaji      | Design and control of spoke type BLDC motor for an electric bicycle                       | 15 months | Budget: Rs.25000<br><br>Items approved<br>1. PM BLDC Motor<br>2. Arduino<br>3. Inverter battery with charger<br>4. Mechanical components<br>5. Miscellaneous                                   |
| 13 | M. Dinesh Ram Kumar (II Year)<br>E. Gautham (II Year)<br>P. Kiran Kumar (II Year)<br>C. Kowshik (II Year)     | Dr. K. Usha        | Smart Room  | 1 year    | Budget: Rs.14000<br><br>Items approved<br>1. Arduino<br>2. Sensor<br>3. Electronic and electrical components<br>4. Miscellaneous   |
| 14 | R. Nithyashree (III Year)<br>K. Rooba Shree (III Year)<br>S. Amirdavarshini (III Year)<br>J. Selvi (III Year) | Dr. R. Seyezhai    | Implementation of enhanced boost Z-source inverter for photovoltaic applications          | 10 months | Budget: Rs.13000<br><br>Items approved<br>1. Charge controller<br>2. MOSFET<br>3. Impedance network<br>4. Mechanical components<br>5. Electronic and electrical components<br>6. Miscellaneous |

|    |  |                    |   |           |  |
|----|--|--------------------|---|-----------|--|
| 15 | R. Saisrinivasan (II Year)<br>S. Santhosh (II Year)<br>Venkatakrishnan Sutharsan (II Year)<br>Pranav Moorthy (II Year)<br>Patrick A Joseph (II Year)<br>Prashanth Seshadri (II Year) | Dr. U. Shajith Ali | Arduino controlled wireless animatronic hand  | 8 months  | Budget: Rs.15000<br><br>Items approved<br>1. Arduino<br>2. Sensor<br>3. Battery<br>4. Electronic and electrical components<br>5. Miscellaneous                                     |
| 16 | R. Subhitcha (IV Year)<br>V. Sowmya (IV Year)<br>R. Vasanthaselvam (IV Year)   | Dr. R. Seyezhai    | Design and implementation of Micro-inverter for photovoltaic application                | 1 year    | Budget: Rs.14000<br><br>Items approved<br>1. Charge controller<br>2. Optocoupler board<br>3. SPARTAN 3E Stick Board<br>4. Electronic and electrical components<br>5. Miscellaneous |
| 17 | Ramyaa Rathna Kumar (III Year)<br>P. Soundaryaa (III Year)   | Dr. R. Seyezhai    | Implementation of GaN based high gain DC-DC converter for automotive HID lamps          | 1 year    | Budget: Rs.14000<br><br>Items approved<br>1. GaN HEMT<br>2. Gate Drive for GaN<br>3. Electronic and electrical components<br>4. Miscellaneous                                      |
| 18 | D. Jason Paul (IV Year)<br>A.V. Balakrishna (IV Year)<br>K. Saiteja (IV Year)<br>R. Ashwin (III Year)  | Dr. A.N. Arvindan  | Investigation of the performance of the position sensorless and conventional BLDC drive | 10 months | Budget: Rs.8000<br><br>Items approved<br>1. BLDC Motor<br>2. Electronic and electrical components<br>3. Miscellaneous  |
| 19 | L. Karthni<br>T. Nishanth  | Dr. S. Tamil Selvi | Advanced street light control system  | 11 months | Budget: Rs.12000<br><br>Items approved<br>1. Solar Panel<br>2. Lead Acid Battery<br>3. Electronic and electrical components<br>4. Miscellaneous                                    |



|    |  |                              |  |                     |   |
|----|--|------------------------------|--|---------------------|---|
| 20 | T.R. Madhavan<br>R.M. Krishna Kumar<br>Sreenidhi Ganapathi<br>Raman<br>A. S. Vikram                            | Dr. M.<br>Senthil<br>Kumaran | Autonomous<br>navigating<br>quascopter (ANQ)   | 1<br>yea<br>r       | Budget: Rs.25000<br>Items approved<br>1. Raspberry Pi<br>2. DC Motor<br>3. Camera<br>4. Batteries<br>5. Arduino<br>6. Electronic and electrical<br>components<br>7. Miscellaneous     |
| 21 | Kubera Moorthy (III<br>Year)<br>S. Sriram (II Year)<br>R. Vignesh (II Year)<br>G. Kishor Sabarish (II<br>Year) | Dr. M.<br>Senthil<br>Kumaran | Development of a<br>path planning<br>autonomous robot<br>using FPGA  | 1<br>yea<br>r       | Budget: Rs.25000<br>Items approved<br>1. Field Programmable Gate Array<br>2. DC Motors with encoders<br>3. Battery<br>4. Electronic and electrical<br>components.<br>5. Miscellaneous |
| 22 | G. Kanimozhi (III<br>Year)<br>K. Parvathy (III Year)<br>M. Devika (III Year)                                   | Dr. S.<br>Krishnave<br>ni    | Design and<br>implementation of<br>Buck-Boost<br>converter for LED<br>lighting<br>application                          | 1.5<br>yea<br>rs    | Budget: Rs.14000<br>Items approved<br>1. MOSFETs<br>2. Aurdino Kit<br>3. Fabrications<br>4. Electronic and electrical<br>components<br>5. Miscellaneous                               |
| 23 | S. T. Pavithraa (III<br>Year)<br>S. Nandhini Priya (III<br>Year)<br>V.K. Meenaapriya (III<br>Year)             | Dr. D.<br>Umarani            | Solar domestic Z-<br>UPS   | 1<br>yea<br>r       | Budget: Rs.25000<br>Items approved<br>1. PV Panels<br>2. Fabrications<br>3. Battery<br>4. Charge Controller<br>5. Electronic and electrical<br>components<br>6. Miscellaneous         |
| 24 | G. Sajna (IV Year)<br>M. Prithika Rani (IV<br>Year)<br>Srinidhi Jagan (IV<br>Year)                             | Dr. R.<br>Leo                | IOT based<br>distributed energy<br>optimization of a<br>smart micro-grid<br>using multi agent<br>system and<br>Arduino | 7<br>mo<br>nth<br>s | Budget: Rs.12000<br>Items approved<br>1. Arduino Mega Board<br>2. Potentiometers<br>3. Electronic and electrical<br>components.<br>4. Miscellaneous                                   |

## PG STUDENT PROJECTS

| <b>No</b> | <b>Name and Year of the Students</b> | <b>Project Guide(s)</b> | <b>Title of the project</b>   | <b>Duration</b> | <b>Budget and items approved</b>  |
|-----------|--------------------------------------|-------------------------|---|-----------------|---|
| 1         | T. Kripalakshmi (II Year)            | Dr. R. Ramaprabha       | Wireless power transformer for electric vehicle charging applications                               | 10 months       | Budget: Rs.25000<br><br>Items approved<br>1. Electronic and electrical components<br>2. Miscellaneous   |
| 2         | S. Devi (II Year)                    | Dr. R. Seyezhai         | Development of high efficiency SiC photovoltaic inverter for green rural homes                      | 1 year          | Budget: Rs.20000<br><br>Items approved<br>1. Electronic and electrical components<br>2. Miscellaneous   |
| 3         | S. P. Vela (II Year)                 | Dr. A.N. Arvandan       | Performance investigation and analysis of single and three phase topologies of the vienna rectifier | 10 months       | Budget: Rs.20000<br><br>Items approved<br>1. Electronic and electrical components<br>2. Miscellaneous   |
| 4         | A.D. Minuaishwarya (II Year)         | Dr. R. Seyezhai         | Development of hybrid multilevel inverter for photovoltaic applications                             | 10 months       | Budget: Rs.24000<br><br>Items approved<br>1. Electronic and electrical components<br>2. Miscellaneous   |
| 5         | S. Akshaya (II Year)                 | Dr. M. Balaji           | Design and development of segmented Rotor SRM with E-Core Stator                                    | 11 months       | Budget: Rs.25000<br><br>Items approved<br>1. Steel Sheet<br>2. Fabrication charges<br>3. Shaft and bearing<br>4. Press fitting<br>5. Static and dynamic balancing |

|   |                                   |   |   |              |  |
|---|-----------------------------------|---|---|--------------|--|
| 6 | K. Kalahasthi Mahesh<br>(II Year) | Dr. V.<br>Kamaraj<br>Dr. R.<br>Rengaraj | Solar VFD system  | 2 year       | Budget: Rs.25000<br><br>Items approved<br>1. Electronic and electrical<br>components<br>2. Miscellaneous               |
| 7 | A. S. Vikram (II Year)            | Dr. V. Rajini                           | Design and analysis<br>of Three phase<br>improved vienna<br>rectifier systems for<br>more electric aircraft | 10<br>months | Budget: Rs.25000<br><br>Items approved<br>1. Sensors<br>2. Electronic and electrical<br>components<br>3. Miscellaneous |

## Dr V Rajini's USA Trip

Dr.V.Rajini, Professor/EEE, has conducted an invited tutorial session on " Design challenges in energy management of Green telecom" at 6th International Conference on Renewable Energy Research and Applications", at Town and country Center, California on November 5-8, 2017. The details of the Tutorial is available at the conference website vide the link [http://www.icrera.org/files/Tutorial\\_Rajini.pdf](http://www.icrera.org/files/Tutorial_Rajini.pdf). Dr.V.Rajini received an 'Appreciation award' for conducting the above tutorial.

She has also presented a paper titled," Real Time Implementation of a Single Stage Converter based Solar-Wind Hybrid system" in Special Session on PV and wind energy conversion systems: design, control, applications at the same conference. She received the 'Best paper award' for this paper. She has also presented a paper titled," Comparison of Active Clamping Circuits for Isolated Forward Converter", in the same conference. Coauthor: Ms. Alagu Dheeraj

Also, she presented about SSN in a collaboration panel and a MOU has been signed by SSN with Nisantsai University, Istanbul, Turkey, for research collaborations She also visited , Sandiego state university for possible research collaborations.





## USA VISIT By Dr.R.Ramaprabha

It is my pleasure to share the technical exposure that I gained during my visit to Hawaii, Honolulu, USA for attending an *International Conference on Power Electronics and Drive Systems (PEDS 2018)* during Dec 12-15, 2017 at Hawaii Convention Center. The conference is a biennial event and is recognized as one of the major series of conferences in power electronics and drive systems. PEDS 2017 continues to retain its tradition of high quality conference and will open up an opportunity for academics and industrial professionals worldwide to exchange their knowledge of the state-of-the-art power electronics and drive technologies and applications.

The 4-day programme featured parallel tutorial and paper presentation sessions. I have attended tutorial sessions on "Predictive control - A simple and powerful method to control power converters and drives" and "Electrical Machines and Wide Band gap Power Electronics for High Speed High Performance Electric Machine Drives" on 12<sup>th</sup> Dec. The sessions were very much informative & I acquired new ideas to extend my research. On 13<sup>th</sup> Dec, the plenary sessions presented on the topics, "Residential solar inverter" and "Solid state transformers" were very much useful and gave me detailed information about their real-time applications to industries. On the same day, the interaction with different people during poster session was quite informative and knowledge sharing. Special session by technical expert panel on 14<sup>th</sup> Dec, titled "Wide band-gap power electronics - bridging the gap between the technology and the market" provided perspective on the status of Sic-GaN power devices and adoption in applications and products. The applications included drive systems and grid interface. On 15<sup>th</sup> Dec, an industrial seminar on the topic "Latest advancement in the real time simulation of power electronics and drive systems" was an incredible experience to know the cutting-edge technologies in Hardware in the loop (HIL) studies. Overall, the technical sessions provided an up-gradation to the knowledge in the areas of new semiconductor device applications to drive systems both in research and industry level.

I presented (Oral presentation) the following papers on Dec 14:

1. "Maximum Power Point Tracking Algorithm of SPVA under Inhomogeneous Irradiation Conditions: A Modified Fibonacci Search Based Approach" (Co-authored by Dr. S. Malathy, Asso.Prof./EEE)
2. "Implementation of Photovoltaic Fed Single Phase Nine Level Hybrid Cascaded Modular Multilevel Inverter with Reduced Number of Devices" (Co-authored by Ms. G. Ramya, Full-time Research Scholar/EEE) – Ms. G. Ramya also joined with me in presenting this paper.

After coming back to college, professors from University of the Ryukyus, Japan showed their interest in our research work through E-mail. This may lead to collaborative research works in future.

This travel & presentation was supported by our Management & DST-ITS scheme (International Travel Grant). I also received approval letter from CSIR under CSIR Foreign Partial Finance Assistance for attending the conference (Travel Grant of Rs. 30,000/-). I am so much grateful to our Management, Principal, Dean Research & HoD for approving my proposal to attend this conference.



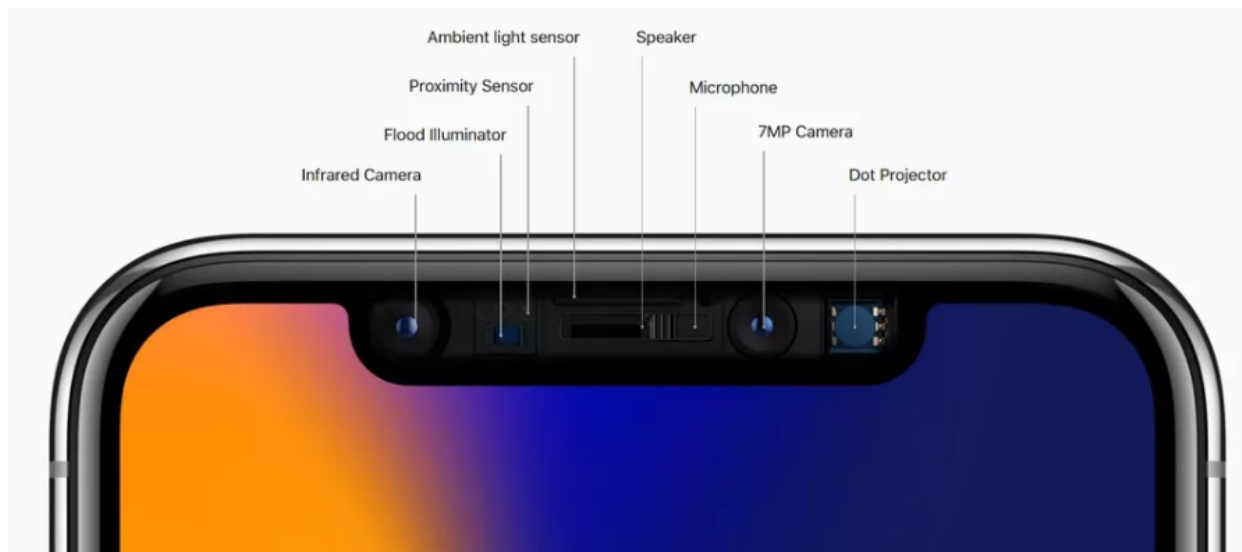
## PLACEMENTS

|                   |                                       |
|-------------------|---------------------------------------|
| Aishwarya V       | HCL                                   |
| Narendran S       | HCL                                   |
| Srivats           | Standard Chartered                    |
| Srinath S         | Standard Chartered                    |
| Vineth Kumar      | Standard Chartered                    |
| Anirudh V         | Standard Chartered                    |
| Shunmuga Priya    | Visteon                               |
| Shri Soundharya J | Visteon                               |
| Priya P           | Lucas TVS                             |
| Shabbeer Basha G  | Titan Engineering and Automation Ltd. |
| Arjun             | Renault Nissan                        |
| Arvind Kumar      | Renault Nissan                        |
| Sowmiya A         | Bank of America                       |
| Karthik           | Kaar Technologies                     |

We congratulate them and wish them success in all their endeavors.



## HOW FACE ID WORKS

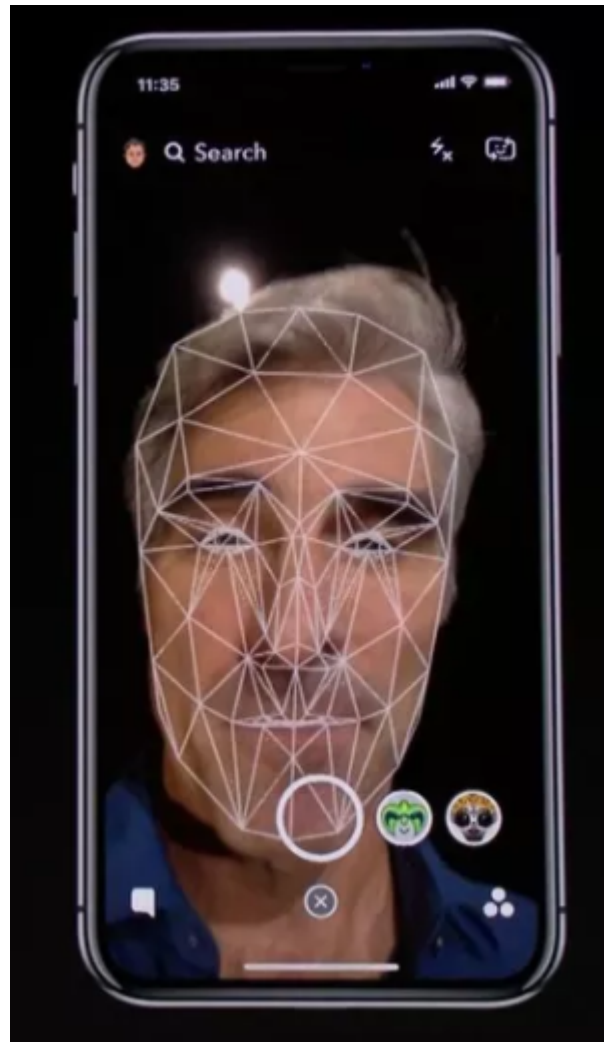


It's like a tiny Microsoft Kinect embedded in your phone, plus machine learning. Apple introduced the iPhone X's TrueDepth sensor, which crams a ton of hardware into a pretty tiny space -- the typical front-facing camera, microphone, speaker, ambient light and proximity sensors are now joined by a new infrared camera, dot projector and flood illuminator. In other words: It can see in 3D.

While those sensors sound awfully complicated, the process appears to be pretty simple: The phone lights up your face, fires out 30,000 invisible infrared dots that highlight your features and create a rough pattern, takes pictures of those dots with the infrared camera and then decides whether the picture looks like you. Apple says the chance of fooling Face ID is literally 1 in a million -- compared with 1 in 50,000 that a random person could fool the fingerprint unlock on an older iPhone. If the tech sounds familiar, you might have used a similar technology before: Microsoft's Kinect, for the Xbox 360 and Xbox One, allowed you to control games by watching the pattern of infrared dots that it projected across your living room. With Face ID, you just double-tap the power button, scan your face and tap the phone against the payment terminal.

In fact, Apple isn't the first company to let you log into a computer using the same basic idea. Microsoft's Windows Hello will let you log in to Windows 10 computers if they're equipped with a depth-sensing infrared camera setup, and can allegedly even tell twins apart. Apple says it uses machine learning so Face ID can grow with you -- machine learning that also runs locally on the phone's processor, instead of phoning home to servers in the cloud.

Apple says it's smart enough to recognize your face if you change hairstyles, add a scarf and hat or grow a beard.



By, Subhitcha R (4<sup>th</sup> Yr. B)

# DO IT YOURSELF!

## 3D OBJECTS USING AUTODESK FUSION 360

By, Shabbeer Basha (4th Year B)

3D Printing is one of the leading technological developments across the globe. Everyone is fascinated on printing 3D objects. This can be done with the help of Autodesk Fusion 360 software, which is free for students, and this license is valid for 3 years. This tutorial will give you a head start on how objects can be designed.

### Designing a Cube of 10 cm

- Firstly, select the top view by clicking on the option **TOP**.

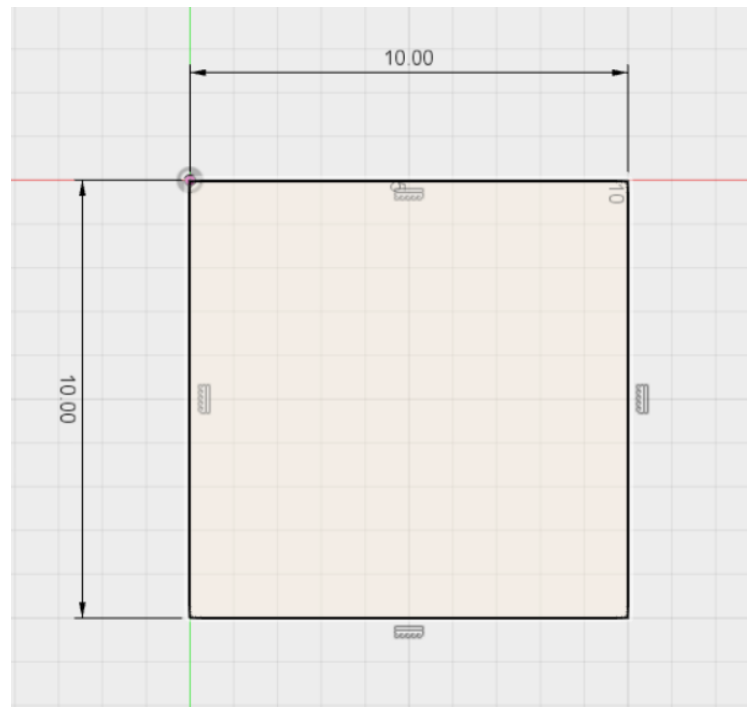


- Choose 2 point rectangle as shown below.

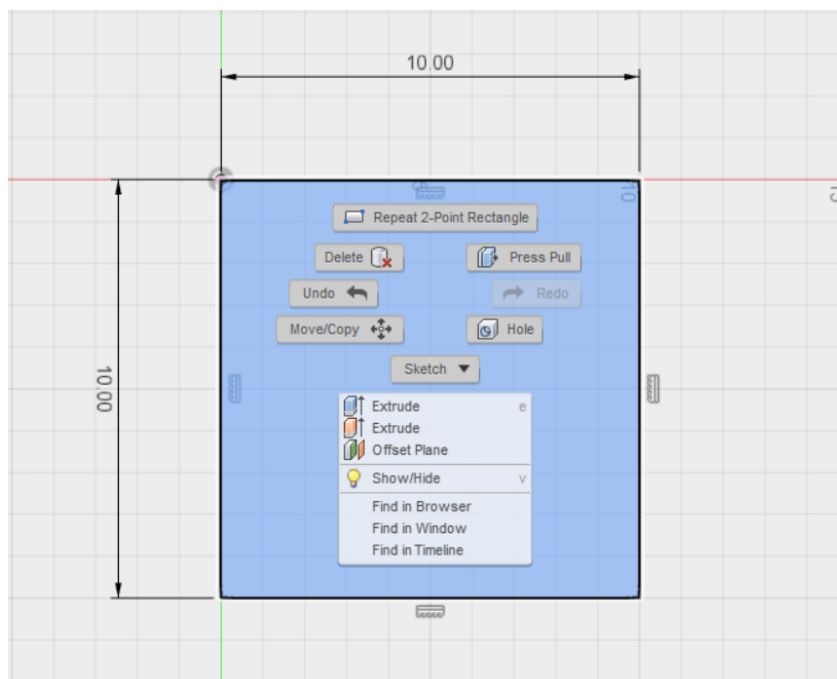




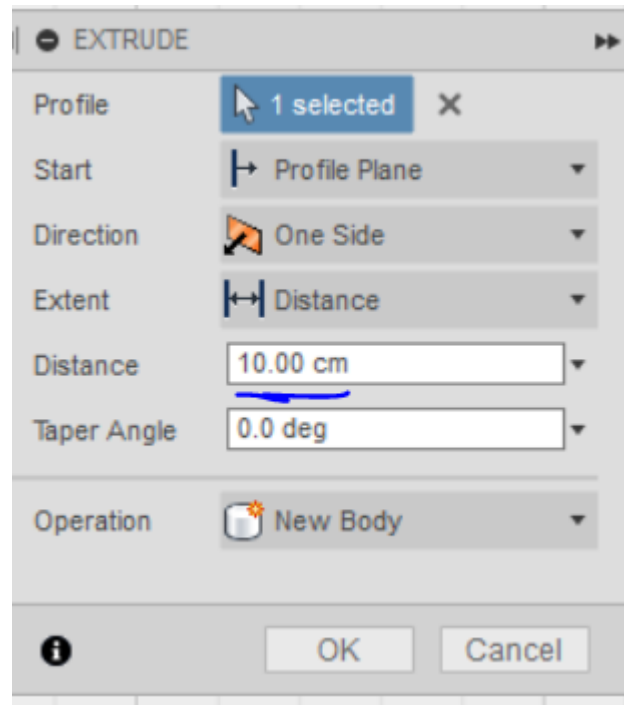
- Place a point and drag the mouse to form a square of side 10 cm.



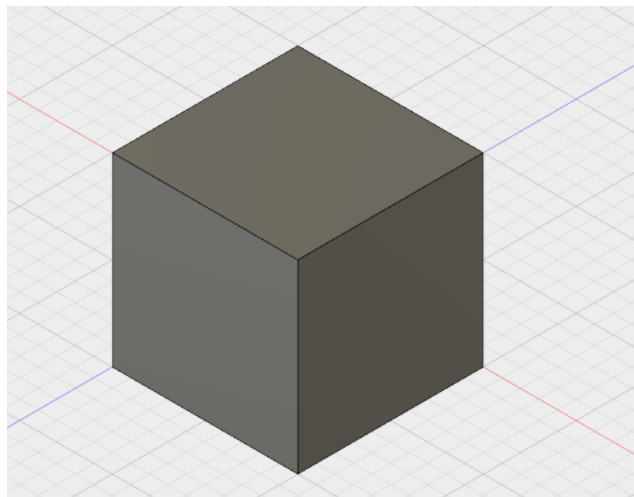
- Right click on the square figure. A menu appears. Click on **Extrude**.



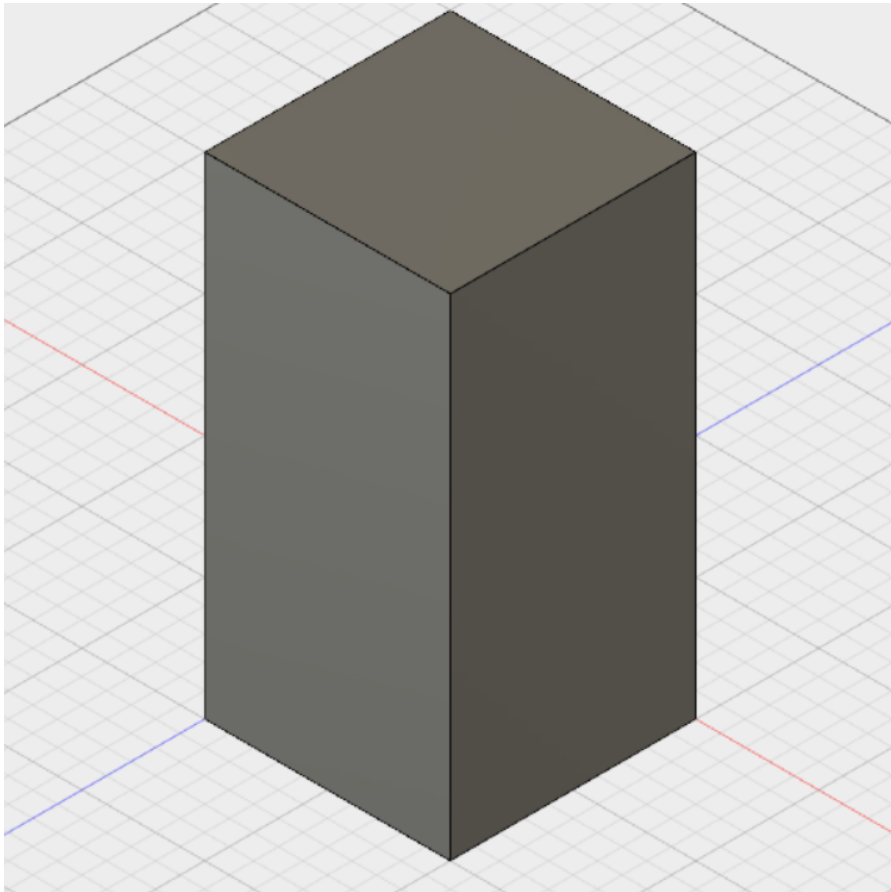
- The **Extrude** menu opens up. Enter distance as 10 cm.



- The cube finally looks like this.



- To make a cuboid, instead of distance being 10 cm, enter 20 cm. The cuboid will look like this.

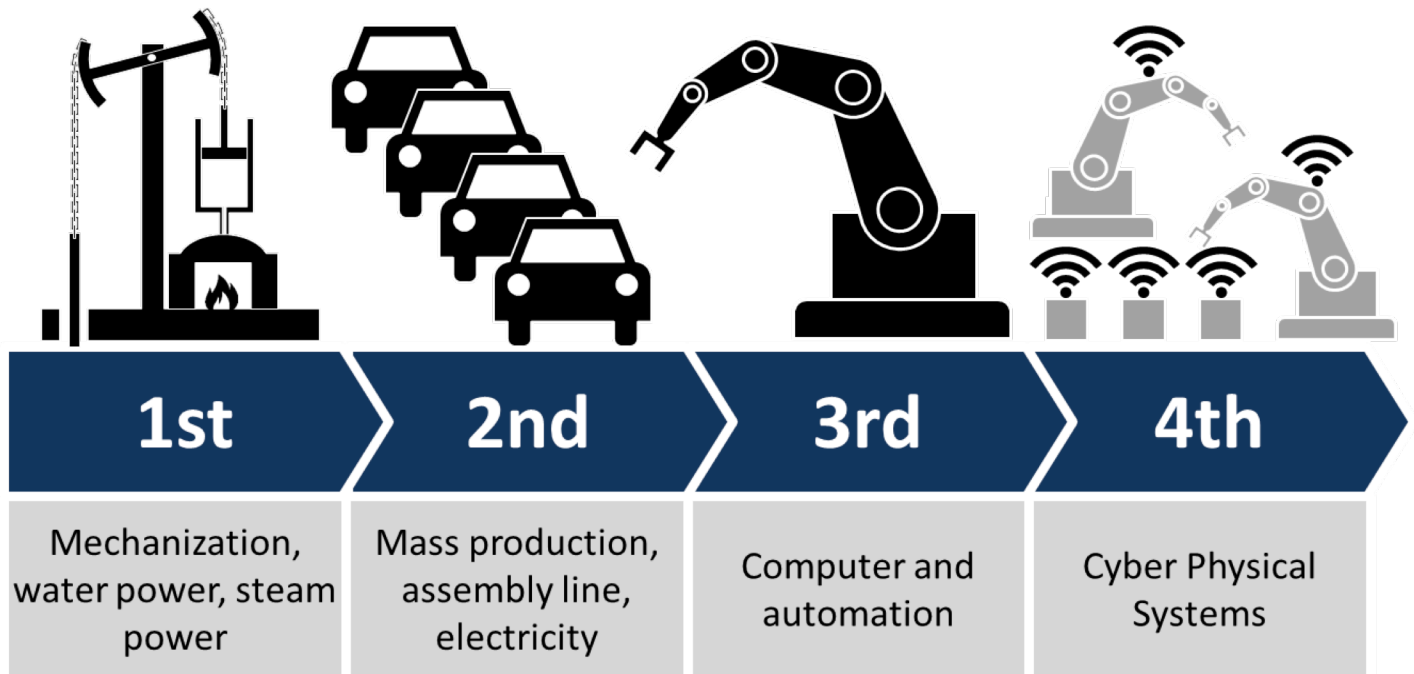


## ALUMNI TALK

### Prepare yourself for Industry 4.0

#### What is Industry 4.0?

The digital revolution gave birth to a multitude of technologies some of which helped in bridging the gap and promoting fusion between the physical, digital and biological spheres. These technologies paved the way for the fourth industrial revolution also known as Industry 4.0.



(Image Reference : Wikimedia commons)

Each industrial revolution is marked by a distinct transformation in the standard of living brought on by the change in the way society interacts with itself. First Industrial revolution propelled the agrarian society into greater productivity. With electricity and assembly line, the second industrial revolution introduced mass production and greater expansion of industries. The third industrial revolution, also known as the digital revolution, used computers and information technology to automate production. Now, the fourth industrial age characterized by such disruptive technologies like Internet of Things( IoT), Robotics, Virtual and Augmented Reality and Artificial Intelligence, is trying to make the productivity at least 3X higher.

## **Why is it Important ?**

With Industry 4.0, it is now possible to have totally personalised products and recommendations based on continuous customer feedback backed by Artificial Intelligence (AI). Predictive maintenance has improved the customer support industry in leaps and bounds. With the omnipresence of fault predictive measures, optimal solutions can be arrived much prior to the occurrence of the predicted fault. Such measures greatly minimize production lags which results in a delay-free eco-system. Repetitive and mundane jobs have already been replaced by AI in most of the companies. While this might ignite debates on unemployment, it is actually a blessing in disguise. Replacing the mundane tasks by AI will pave a way to create new job opportunities with challenging roles.

## **What students should do ?**

To satiate such protean needs of industry 4.0, well rounded and agile individuals are required. They need to be able to adapt and master fast changing technologies. Good programming knowledge coupled with core engineering skills is a must for any individual to be a part of Industry 4.0. Students must explore as many areas as possible and try to gain expertise in at least three disciplines. For instance, a student hoping to master Embedded software engineering should have in-depth knowledge of Algorithms (Logic Design), Programming (C/C++) and Computer Architecture.

Moreover, students should develop the ability to think out-of-the-box and master the skills required to adapt to a continuously changing environment. With decrease in team sizes, there is a dearth of leaders. Sound leadership skills and the art of developing good strategies will help put the student on the path to success.

## **My Background :**

I worked as an Electronics Engineer at Atomberg Technologies for a year where I developed Firmware for India's most energy efficient ceiling fan. Currently, I am a part of the Programming Models Group of Innovation Centre Network at SAP Labs where we are developing a Domain-Specific Programming Language for developing Enterprise application.

By, Aditya Selvaprithivraj ( BE BATCH OF '16)

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