REDEEEM

Volume 9
Issue 3

The 5 Minute Charging Battery

Promising Road to a Clean Future

AI in Power System Distribution

INDEX

FROM HOD'S DESK

It gives us immense pleasure to present this newsletter which sheds light on the activities of the department in the past three months. Under the mentorship of Dr.P.Vijayalakshmi, Professor, ECE, NBA activities of the EEE department has been jump-started and the SAR report has to be submitted by the First week of March 2021. Dr.Ganesh Samudra provided guidelines in formulating PO, PEO and CO for various subjects. Department has the following future plans to make the institution globally visible.

Department has started to offer a one-credit course titled "Hybrid-Renewable Energy Systems in Microgrids" by Dr.Saad Mekhilef, Professor, Faculty of EngineeringUniversity of Malaya, Kuala Lumpur, Malaysia. Mr.Hithuanand has joined as SRF and is working in the area of smart grid. Our faculty members organised many technical events virtually. In R&D the department is progressing in terms of a good number of publications, PhD completion and submission of new proposals.

I congratulate and thank all the faculty members who have contributed to the department

EDITORIAL

"I was born stupid and non-creative. I have nothing original to say about anything and it hurts." — a teenager. At times many of us used to think like that. But don't convince yourself you aren't creative. Most of us tell ourselves negative things and believe them as true. "I'm not cool", "I'm not attractive", and stuff like that or occasionally as you seem to be chanting, "I'm not creative". It's a universal principle of nature that you become what you believe. The world has a way of manifesting your deepest thoughts and convictions so be careful of what you believe for that has a way of coming true.

If ever you go deep enough inside your mind and touch the very roots of your negative thoughts, you will have to recall your early childhood and relive the experience of how different people your own father, mother or brother or friend or teacher screwed up your mind and shoved a whole bunch of fears, anxieties and insecurities inside you things which you believed as true then because you were very young and didn't have the mental power to know it wasn't so. All growth in life is essentially an unlearning, an effort to reverse the deep negativity that is choking you up. Start by asserting the very thought you refused to believe so far. Say, "I am a very creative person. I can come up with an original idea for almost anything." Say it as many times a day as possible and allow the words to sink inside.

EDITORIAL

Creativity is an expression of two basic streams of consciousness. The first stream is the subliminal flow inside you. By that, I mean half-conscious thoughts your mind naturally throws up all the time. You are responding to everything around you in a naturally artistic way, but that artistry is subliminal not easily accessible to your conscious mind. This is the reason why you can enjoy a song or a movie or a painting. Your mind is responding creatively to the artistic effort and because of that response, you enjoy it. If you weren't naturally creative, you couldn't appreciate art or music or a movie. But the difference between you and a movie director is that he knows how to tap his subliminal mind and you don't.

The moment you start asserting "I am creative", you open a window in your conscious mind and allow the subliminal creativity in you to start flowing in. You will become sharply conscious of beauty everywhere, you will start appreciating artistry more acutely and soon enough, you will start getting new original ideas from deep inside. Know that all creativity is only tapping of what is thrown up from within. If you relax and allow yourself, your unconscious mind can throw up such fantastic ideas, such great music, such awesome visuals, such complex beauty that can mesmerise you and the world with its grace and power.

FACULTY ACTIVITY

External Recognition

1. Dr. R. Ramaprabha, ASSP/EEE was as a resource person for Five-day online Faculty Development Program on “Recent Trends on Green Energy-2020 (RTGE-2020)" during Oct 12 – 16, 2020 conducted by Department of EEE, GMR Institute of Technology, Rajam, AP, India and delivered a technical talk on “Photovoltaic System technology, Challenges & Research Opportunities” on Oct 12, 2020, through online mode.

2. Dr. R.Seyezhai, ASSP/EEE delivered a guest lecture titled “Honey Bee Optimization Algorithm in the AICTE Sponsored Six days Short Term Training Programme (STTP) on “Modern Optimization Tools in Engineering Field-I on 08.10.2020 organized by SRM Valliammai Engineering College, Kattankulathur.

3. Dr. R.Seyezhai, ASSP/EEE delivered a guest lecture titled, “Advanced Power Converters Topology for Electric Drives Applications” in the National Workshop Programme on “Research Challenges in Advanced Power Converters for Electrical Engineering Applications” on 28.10. 2020 organized by New Horizon College of Engineering, Bangalore.

4. Dr. R. Ramaprabha, ASSP/EEE was as a resource person for six days AICTE sponsored Short Term training program (Phase-II) in online mode for faculty members on the title ‘Modeling and Simulation of Renewable Energy Systems using MATLAB’ during Nov 02-07, 2020 conducted by Department of EEE, MNM Jain Engineering College, Chennai, India and delivered a lecture on “Progress in Solar PV Systems-An Overview” on Nov 04, 2020, through online mode.

External Recognition

5. Dr. R. Ramaprabha, ASSP/EEE was as a resource person for AICTE sponsored two weeks online Faculty Development Program on “High Power Conversion Electronics for Green Energy Based Smart Grid” during Nov 16-28, 2020 conducted by Department of EEE, S. A. Engineering College, Chennai, India and delivered a lecture on “Soft Computing Techniques for Solar PV Energy Conversion” on Nov 18, 2020, through online mode.

6. V Rajini, Prof/EEE, attended a DC meeting of Mrs. P. Aruna, supervisor. Dr.V. Vasan Prabhu, SRMIST, Kattangulathur campus on 25-11-2020.

7. Dr. M.Balaji ASSP/EEE delivered an online lecture titled," Data Analytics in Smart Grid– An Insight " in AICTE Sponsored online Short Term Training Programme on Data Analytics for Smart Grid Technology organized by St. JOSEPH’S institute of technology on 16.11.2020.

8. Dr. R.Seyezhai, ASSP/EEE delivered a guest lecture titled, “Power Electronic Devices Circuits for Smart Grid” in the AICTE sponsored FDP titled "Advances in Power Electronics for Smart Grid, Renewable Energy Systems and Electric Vehicle Technology” on 03.11.2020 organized by Agni College of Technology, Thalambur, Chennai.

9. Dr. R.Seyezhai, ASSP/EEE delivered a guest lecture titled,’ Power Converters for Fuel Cell Applications” in the AICTE sponsored online STTP on the Title 'Modeling and Simulation of renewable energy systems using MATLAB (phase II)on 06.11.2020 organized by Department of Electrical and Electronics Engineering, Misrimal Navajee Munoth Jain Engineering college Chennai- 600097.

External Recognition

10. Dr. R.Seyezhai, ASSP/EEE delivered a guest lecture titled," Design and Fabrication of Solar Powered Electric Vehicle using BLDC Drive" on 17.11.2020 in the AICTE - AQIS sponsored STTP on "Challenges and Opportunities in Electric Vehicle Technology Adoption" organized by Sri Krishna College of Technology, Coimbatore.

11. Dr. R.Seyezhai, ASSP/EEE delivered a guest lecture titled, "Wide Bandgap Devices for Smart Grid" on 24.11.2020 in the AICTE sponsored two weeks online Faculty Development Program on "High Power Conversion Electronics for Green Energy Based Smart Grid" organized by S.A.College of Engineering, Chennai.

12. Dr. S.Tamilselvi, ASP/EEE delivered a talk as a Resource person for Five Days Faculty Development Program on 'Recent Trends in Electrical Technologies Adopted by Industries' held between 4.12.2020 – 09.12.2020, and presented "Optimization using Genetic Algorithm in MATLAB" on 08.12.2020, which was organised by the Department of EEE, VelTech Multitech Dr.Rangarajan Dr.Sakunthala Engineering College, an Autonomous Chennai.

13. Dr. N. B. Muthu Selvan, ASSP/EEE delivered a Guest Lecture titled, "Design implication of Photovoltaic system' organized by S.A. College of Engineering, Chennai on 10.12.2020.

14. Dr. N. B. Muthu Selvan, ASSP/EEE delivered a Guest Lecture titled, "Emergence of AI and its Application in the Power Electronics Industry"' organized by Sri Sai Ram, College of Engineering, Chennai on 18.12.2020.

External Recognition

15. Dr.V.Rajini, Prof/EEE, delivered a Lecture on " High power Converters for Hybrid Power systems" on AICTE Sponsored Two Weeks Online Faculty Development Program organized by SA Engg college on 8-12-2020.

16. Dr.V.Rajini, Prof/EEE, reviewed a book titled, Basic Electronics, to be published by Oxford University Press.

17. Dr.R.Seyezhai, ASSP/EEE delivered a guest lecture titled, “Modern Power Converters for Smart Grid Applications ” on 4.12.2020 in the AICTE sponsored STTP on “Data Analytics for Smart Grid Technology organized by St.Joseph’s Institute of Technology, Chennai.

18. Dr.R.Seyezhai, ASSP/EEE delivered a guest lecture titled, “Design and Fabrication of Solar Powered Electric Vehicle using BLDC Drive” on 19.12.2020 in the AICTE - AQIS sponsored STTP (Phase-2) on "Challenges and Opportunities in Electric Vehicle Technology Adoption" organized by Sri Krishna College of Technology, Coimbatore.

19. Dr. R. Ramaprabha, ASSP/EEE chaired a technical session for 2020 IEEE International Symposium on Sustainable Energy, Signal Processing and Cyber Security (IEEE-iSSSC 2020) conducted by GIET University Gunupur, Odisha, India sponsored by IEEE-Kolkata section on Dec 16, 2020.

20. Dr.M.Balaji ASSP/EEE delivered an online lecture titled," Overview of Artificial Intelligence Techniques in Renewable Energy Systems” in ATAL Academy Sponsored 5 days Faculty Development Programme on SUSTAINABILITY ENGINEERING organized by St. JOSEPH’S college of Engineering on 15.12.2020.

Research Activity

1. Damodaren P.(Siechem Wires & Cables), Rengaraj R. (ASSP/EEE), Rohit D. (Siechem Wires & Cables), Venkatakrishnan G.R. (ASSP/EEE), Santhoosh Aravind S (Student) "Experimental Validation of Magnetic Field for Three-Phase Cables After Conductor Splitting and Phase Mixing", Advances in Intelligent Systems and Computing, vol 1163, pp. 303-314, Springer, Singapore, October 2020.

2. Dr. Rengaraj R. (ASSP/EEE), Dr. Venkatakrishnan G.R. (ASSP/EEE), Moorthy P. (Student), Pratyusha R. (Student), Ritika(Student), Veena K(Student). "Transformer Oil Health Monitoring Techniques—An Overview", Advances in Intelligent Systems and Computing, vol 1163, pp. 135-154, Springer, Singapore, October 2020.

3. Augustine Mathu Gnaniah, Dr. Balaji Mahadevan, ASSP/EEE and Dr. Kamaraj Vijayarajan, Prof&Head/EEE “Influence of Laminating Materials and Modified Pole Shapes on the Performance of Segmented Rotor Switched Reluctance Motor” Journal of Magnetics (eISSN 2233-6656), Vol.25, No.3, pp.347-354,2020-(Web of Science) impact factor (2019/2020): 0.480.

4. Dr. V. Thiyagarajan, ASSP/EEE, has published the paper titled " A New 75-Level Inverter Topology with Reduced Number of Switch Count" in Advances in Intelligent Systems and Computing (Springer), ISSN:2194-5357, Vol. 1163, (2021), pp. 337-346. doi: https://doi.org/10.1007/978-981-15-5029-4_28.

5. Dr.R.Seyezhai/ASSP/EEE, K. Murugappan, G. Kishor Sabarish, N. Kaashyap, J. Jason Ranjit (passed out UG Students) published a paper titled, “Simulation and Analysis of Interleaved Buck DC-DC Converter for EV Charging” in Lecture Notes in Electrical Engineering, Springer PublicationsVol.1, 2020. (SCOPUS Indexed, SJR Factor: 0.14).

Research Activity

6. Dr.R.Seyezhai/ASSP/EEE & M.Sridhar (Full-time research scholar) published a paper titled, “Simulation and Analysis of Integrated SEPIC-Flyback AC-DC PFC Converter for LED Applications”, Lecture Notes in Mechanical Engineering, 2020. (SCOPUS INDEXED, SJR Factor:0.17)

7. T. Divya and R. Ramaprabha, Comparative Topological Study of Embedded Based Switched Boost Inverter” Advances in Parallel Computing (IOS press E-books), Pages 37 – 44, Volume 37 in Intelligent Systems and Computer Technology, ISBN: 978-1-64368-102-3 (print) | 978-1-64368-103-0 (online), DOI 10.3233/APC200116 - Scopus indexed.

8. M. Joly and R. Ramaprabha, “Fuzzy tuned PI controller with improved sliding mode controller for three-phase AC/DC converter in DC-DC distribution system”, Solid State Technology, Vol. 63, Issue: 2s, pp. 6580-6593, 2020. Indexed in Scopus.

9. Prabhu Sundaramoorthy, Dr. Balaji M ASSP/EEE., Suresh K., Ezhilventhan Natesan, Mohan K." Vibration analysis of E-core flux reversal free stator switched reluctance motor" Circuit World, Vol. 46 No. 4, pp. 325-334,2020- Clarivate Analytics (Thomson Reuters) (2019): 1.395.

10. Dr. R.Seyezhai/ASSP/EEE & Lakshmi Prabha (Passed out PG scholar) published a paper titled, “Simulation and Hardware Implementation of Interleaved SEPIC Converter with Valley-Fill Circuit for HBLED System”, Lecture Notes in Mechanical Engineering, 2020. (SCOPUS INDEXED, SJR Factor:0.17)

Research Activity

11. Dr. R.Seyezhai/ASSP/EEE, S.Harika (Full-time research scholar) & Dr A.Jawahar (Professor/ECE) published a paper titled, “Simulation study of Shading effects on PV Array”, Lecture Notes in Mechanical Engineering, 2020. (SCOPUS INDEXED, SJR Factor: 0.17).

12. M. Vijayalakshmi and R. Ramaprabha, “Material Suitability for a Flywheel in a Solar Photovoltaic Fed Power Conditioning System”, Solid State Technology, Vol. 63, Issue: 5, pp. 5214-5225, 2020. Indexed in Scopus.

Conference Activity

1. Venkatakrishnan G R (ASSP/EEE), Rengaraj R(ASSP/EEE), Adithya Pillai R (Student), Abinandhan R (Student), Dev Ganesh S (Student), Aravind K (Student) presented a paper titled "Identification of Underground Faults using Internet of Things (IoT)" at the second International Conference on Smart and Intelligent Learning for Information Optimization (CONSILIO) - 2020, organised by Consilio Intelligence Research Lab in collaboration with Jaypee University of Engineering & Technology, Guna, MP & Student branch of JUET, Computer Society of India, held at Panjim, Goa, India on October 24-25, 2020.

Conference Activity

2. Dr. V. Thiyagarajan, ASSP/EEE, has presented the paper titled " Comparative Analysis of Recently Developed 9-level Symmetrical Inverter" in the "Virtual International Technical Conference on Control in Electric Vehicles and Smart Grid with Renewable Energy Synergies (VIT-CES-RES)" organized by VIT University, Chennai during 29/10/2020 - 30/10/2020.

3. Dr. V. Thiyagarajan, ASSP/EEE, has presented the paper titled “Switching Pulse Generation Using Logic Gates for Symmetric 9-Level Inverter" in the International Conference on “Advances in Science and Technology for Betterment of Health, Environment and Energy” organized by GITAM University, Bangalore on 03/12/2020.

4. Dr. V. Thiyagarajan, ASSP/EEE, has presented the paper titled “Comparative Analysis of Recently Proposed Extendable Type Inverter Topologies" in the International Conference on “Advances in Science and Technology for Betterment of Health, Environment and Energy” organized by GITAM University, Bangalore on 03/12/2020.

5. Roshan Darran R (II year/EEE), Vallabagurunath M (II year/EEE), Rufus Derrick R (II year/Mech), Dr. V. Thiyagarajan, ASSP/EEE, has presented the paper titled “Automatic Smart Streetlight System Using Arduino " in the International Conference on “Advances in Science and Technology for Betterment of Health, Environment and Energy” organized by GITAM University, Bangalore on 03/12/2020.

Conference Activity

6. R. Mirdula (II year/EEE), V. K. Praveena (II year/EEE), M. Sanjana (II year/EEE), V. Vaishnavi (II year/EEE), Dr. V. Thiyagarajan, ASSP/EEE, has presented the paper titled “Simulation Analysis of 13 Level Asymmetric Multilevel Inverter Topology" in the International Conference on “Advances in Science and Technology for Betterment of Health, Environment and Energy” organized by GITAM University, Bangalore on 03/12/2020.

7. Dr.V.Rajini, Saiprasanna, Shridhana, Rathish Kumar, Vishnu Menon, published a paper titled," A Solid-State Transformer Based Hybrid Wind Energy Flywheel Wind Energy System” at international conference ICARSES 2020 at SRMIST on dec 3-5, 2020

Project News

1. Dr. V. Rajini and Dr. A. Jawahar submitted a project proposal on Margdarshan scheme to AICTE. Budget amount : Rs 42,90,000/- On 9-11-2020.

2. Dr.V.Rajini and Dr. S. Krishnaveni submitted a project proposal titled," An all-electric post-harvesting facility for cardamom crops enabling sustainable agriculture in South India on POWER scheme to DST. Budget amount: Rs 2568000 /- on 31-12-20202.

3. Dr Mrunal Deshpande and Dr Alagu Dheeraj submitted project proposal titled, “ Solar Powered Switched Reluctance Motor Drive for Drip (Micro) Irrigation System” POWER scheme to DST . Budget amount: Rs 30,00,000 /- on 28-12-2020.

Project News

4.Dr.S.Tamilselvi ASP/EEE (PI), Dr.R.Rengaraj (CO-PI), Dr. G.R.Venkatakrishnan (CO-PI) were sanctioned a project titled, “Fault detection of solar PV firm using machine learning and thermal image processing” on 24.12.2020 funded by SSN Trust.

5. Dr. V. Thiyagarajan, ASSP/EEE, Dr. V. Kamaraj, Prof/EEE, Dr. R. Rengaraj, ASSP/EEE, Dr. G.R.Venkatakrishnan, ASSP/EEE have sanctioned a project titled “Design and implementation of a smart controller for variable frequency drive” funded by SSN Trust during 2020-2022.

6. Dr. Mrunal Deshpande ASSP/EEE (PI) and Dr. R. Govindaraj SSN RC (CO-PI) were sanctioned a project titled “Fabrication of bifacial dye-sensitized solar cells using conducting transparent counter electrodes” funded by SSN Trust during 2020-2022.

FDP/WS/Webinars Attended

1. Dr.M.Balaji, Associate Prof/EEE, attended an "electric Vehicles-Initiatives and Technologies" conclave organised by VIT, Chennai on 23rd and 24th October 2020.

2. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the Faculty Development Program on "IPR & Innovation Management in Engineering Science" organized by Prasad V. Potluri Siddhartha Institute of Technology, Kakinada on 08/10/2020.

3. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the Faculty Development Program on "Recent Trends on Green Energy (RTGE-2020)" organized by GMR Institute of Technology, Rajam, Andhra Pradesh during 12/10/2020 - 16/10/2020.

FDP/WS/Webinars Attended

4. Dr. V. Thiyagarajan, ASSP/EEE, has participated & completed successfully AICTE Training And Learning (ATAL) Academy Online FDP on " Modeling and Simulation of Energy Systems" organized by Indian Institute of Technology (IIT) Roorkee during 19/10/2020 - 23/10/2020.

5. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the Short Term Course on " Recent Trends in Microgrid-2020 (RTM-2020)" organized by National Institute of Technology Jamshedpur during 27/10/2020 - 31/10/2020.

6. Dr.N.B. Muthu Selvan, Associate Prof/EEE, AICTE Training and Learning (ATAL) Academy - Five days online Faculty Development Programme on, “Modeling and Simulation of Energy Systems” from 19th to 23rd October 2020, organised by the Department of Hydro and Renewable Energy, Indian Institute of Technology (IIT) Roorkee.

7. Dr Mrunal Deshpande attended a webinar on Special and types of transformers conducted by North Star Knowledge Academy, Pune on 178.10.2020.

8. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the workshop on "EMI/EMC issues in Power Converters and Electric Vehicle" organized by VIT University, Chennai on 06/10/2020.

9. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the workshop on "IEEE R10 Panel of Conference Organizers (POCO)" organized by IEEE Madras Section on 10/10/2020 & 11/10/2020.

10. Dr.R.Seyezhai, ASSP/EEE attended the webinar on E-Mobility in India" In Association with SkillShark EduTech Pvt Ltd organized by New Horizon College of Engineering, Bangalore on 26.10.2020.

FDP/WS/Webinars Attended

11. Dr.R.Seyezhai, ASSP/EEE attended the online training on, “Case study on Electric and Hybrid Power train Design” organized by Haritha Technologies from 26.10.2020- 30.10.2020.

12. Dr.R.Seyezhai, ASSP/EEE attended the online program of the Launch of IP Literacy Initiative & Performance Rating of Institutions’ Innovation Council (IIC) by MHRD on 15.10.2020.

13. Dr.N.B. Muthu Selvan, Associate Prof/EEE, attended a Two-day Workshop on, “IEEE R10 Panel of Conference Organizers (POCO)” from 10th to 11th October 2020, organised by the IEEE Madras Section, Chennai.

14. Dr.N.B. Muthu Selvan, Associate Prof/EEE, attended One day Workshop on, “How to Publish a Quality Technical Paper with IEEE” on 15th October 2020, organised by the IEEE Author Relations.

15. Dr. M. DEVESH RAJ, ASSP/EEE and Dr N. B. Muthuselvan ASSP/EEE attended an online FDP on “Electric Vehicles” organised by AICTE Training And Learning (ATAL) Academy from 2020-11-2 to 2020-11-6 at Hindustan Institute of Technology and Science.

16. Dr. M. Balaji ASSP/EEE, attended a 5-day online AICTE Training And Learning (ATAL) Academy sponsored faculty development program on “Machine Learning and Applications” conducted by the Indian Institute of Information Technology and Management Gwalior, from 23.11.2020 to 27.11.2020.

17. Dr. V. Thiyagarajan, ASSP/EEE, has participated & completed successfully AICTE Training And Learning (ATAL) Academy Online FDP on "Electric Vehicles" organized by Hindustan Institute of Technology and Science during 02.11.2020 – 06.11.2020.

FDP/WS/Webinars Attended

18. EEE/EA/56 Dr. M. Devesh Raj, ASSP/EEE attended the 5-day online workshop on Universal Human Value on the theme “Inculcating Universal Human Values in Technical Education” organized by All India Council for Technical Education(AICTE) during 19-23, October 2020. The e-certificate from AICTE was received after processing of attendance and test performance on 2, November 2020.

19. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the AICTE sponsored six days online Short Term Training Programme on “Solar PV Technology: Envisaged Future Challenges and Mitigation Methods for High Photovoltaic Penetration” organized by Paavai Engineering College, Namakkal during 09.11.2020 - 14.11.2020.

20. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the AICTE sponsored six days online Short Term Training Programme on "IoT in Agriculture and Smart Farming" organized by Velammal Engineering College, Chennai during 16.11.2020 - 21.11.2020.

21. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the AICTE sponsored six days online Short Term Training Programme on "Futuristic Innovations, Trends in Renewable Energy and Utilization Technologies" organized by V.S.B Engineering College, Karur during 23.11.2020 - 28.11.2020.

22. Dr.S. Krishnaveni, Associate Prof/EEE, attended an ATAL-sponsored Five days FDP on “Energy- Internet of Things (E-IoT)” organized by the Department of Electrical Engineering, Shri Ramdeobaba College of Engineering and Management, Nagpur from 15th to 19th December 2020.

FDP/WS/Webinars Attended

23. Dr.N. B. Muthu Selvan, ASSP/EEE, AICTE Training And Learning (ATAL) Academy Online FDP on AICTE Training And Learning (ATAL) Academy Online FDP on "Artificial Intelligence" from 2020-12-7 to 2020-12-11 at Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal.

24. Dr.N. B. Muthu Selvan, ASSP/EEE, AICTE Training And Learning (ATAL) Academy Online FDP on "Cyber Security" from 2020-12-1 to 2020-12-5 at Indian Institute of Information technology, Kottayam.

25. Dr. V. Thiyagarajan, ASSP/EEE, has participated in the AICTE & ISTE sponsored FDP on “Recent Developments in AI & Robotics” organized by Baba Farid College of Engineering & Technology, Punjab from 07/12/2020 – 12/12/2020.

26. Dr. V. Thiyagarajan, ASSP/EEE, has participated & completed successfully AICTE Training And Learning (ATAL) Academy Online FDP on " Integration of Alternate Energy Resources in Smart Grid " organized by National Institute of Technology (NIT) Delhi from 25/12/2020 – 29/12/2020.for non-FDP and non-conf, all events.

27. Dr.R.Seyezhai, ASSP/EEE attended the online orientation session for the Institute Innovation Council (IIC) organized by MHRD for the south zone.

28. Dr.R.Seyezhai, ASSP/EEE attended the online orientation session for the ARIIA 2021 ranking regarding the submission of data and entry of data in the web portal organized by MHRD.

29. Dr.R.Seyezhai, ASSP/EEE, and Dr. S.Sureshkumar, ASSP/Mechanical conducted the first council meeting for the IIC initiated at SSN Institutions headed by our Principal along with the activity co-ordinators and members of IIC.

FDP/WS/Webinars Attended

30. Dr. R. Ramaprabha, ASSP/EEE participated & Completed successfully ATAL Academy online FDP on “Sustainability Engineering” during Dec 14-18, 2020. The event was conducted by the Department of EEE, St. Joseph’s College of Engineering, Chennai.

30. Dr. V. Thiyagarajan, ASSP/EEE, participated in the AICTE sponsored six days online STTP on “Research Challenges and Applications of Internet of Things (IoT) in Smart Agriculture” organized by Kongunadu College of Engineering and Technology, Trichy from 30/11/2020 – 05/12/2020.

Scholar Related

1. Ms. Shanmugha Vadivu, PhD scholar of Dr. R. Ramaprabha, submitted her thesis to Anna University & received Scrutiny report.

2. Dr. R. Ramaprabha, ASSP/EEE attended DC meeting for PhD candidate at Department of EEE, Dr. M.G.R. Educational and Research Institute, Chennai as DC member on 19/10/2020

3. Dr. R. Ramaprabha, ASSP/EEE attended DC meeting for PhD candidate at Department of EEE, RMK Engineering College (Affiliated to Anna University) as DC member on 20/10/2020.

4. Dr.R. Rengaraj, (ASSP) conducted the Confirmation meeting for the scholar Mr Anbuchandran (part-time) through Zoom platform on 19.10.2020.

Scholar Related

5. Dr.R.Seyezhai, ASSP/EEE conducted the seminar for the synopsis meeting requirement in online mode for the scholar Ms.R.Niraimathi (Part-time scholar) on 20.10.2020.

6. Dr.R.Seyezhai, ASSP/EEE conducted the seminar for the synopsis meeting requirement in online mode for the scholar Ms.M.Shanthi (Part-time scholar) on 20.10.2020.

7. Dr. R. Ramaprabha, ASSP/EEE attended DC meeting for PhD candidate at School of Electrical Engineering, VIT University (Chennai Campus) as DC member on 12/11/2020.

8. Dr. R. Ramaprabha, ASSP/EEE attended 2 DC meetings for PhD candidates at Department of EEE, Dr. M.G.R. Educational and Research Institute, Chennai as DC member on 23/11/2020.

9. Dr.S.Tamilselvi (ASP) conducted confirmation DC meeting for the scholar Ms.C.Sonia (part-time) through Zoom platform on Dec 14, 2020.

10. Dr.S.Tamilselvi (ASP) arranged a research seminar for Research scholar Ms.C.Sonia (part-time) on the topic “Performance Improvement of Smart-grid using Embedded Transformer” in EEE seminar Hall, SSNCE on 14.12.2020.

11. S.Tamilselvi (ASP) DC member attended a virtual confirmation DC meeting of Mrs.G.Sundari (Reg No. 19243997152) held on 15.12.2020 through Google Meet.

12. Dr.R.Seyezhai, ASSP/EEE attended the first online DC meeting for the full-time scholar at VIT University, Chennai.

Scholar Related

13. Dr.R.Seyezhai, ASSP/EEE conducted the Ph.D. Viva-voce online examination for the part-time scholar Mr.T.S.Saravanan at SSNCE on 18.12.2020.

14. Dr.V.Rajini, Prof/EEE, attended a DC meeting of Mr. Natarajan, supervisor. Dr.VIjayarekha, SASTRA University on 28-12-2020.

15. Ms. T. Divya, FT-RS/EEE of Dr. R. Ramaprabha, ASSP/EEE attended the CSIR-SRF/RA Online Selection Interview in Electrical, Electronics, Instrumentation & Computer Engineering sciences on Dec 01, 2020.

16. Ms. M. Vijayalakshmi, PT-RS/EEE of Dr. R. Ramaprabha, ASSP/EEE presented a research seminar on 04/12/2020.

Events Conducted

1. Webinar was delivered by Dr. M. Sujatha, ASSP, Hindustan Institute of Technology and Science, Chennai and
Dr. D. Umarani, ASSP/EEE, Sri Sivasubramaniya Nadar College of Engineering, on the topic: “Reliability Analysis of Photovoltaic Power Converters” on 30th November 2020. Organizers: Dr. V Kamaraj, Dr R Seyezhai, Dr. D. Umarani in association with IEEE – Power Electronics Society, Madras Chapter.

2. Dr.R.Seyezhai, ASSP/EEE, Dr.S.Nanda (Student Counsellor), Dr.S.Suresh Kumar, ASSP/Mech and Dr.M.Balaji, ASSP/EEE conducted the webinar on Entrepreneurship and Innovation as a Career opportunity under IIC on 19.12.2020.

Events Conducted

3. Department of EEE Organized Three day National Seminar on "**Applications of Machine Learning in Electrical Engineering**" during Dec 01-03, 2020.

Conveners:

Dr. V. Kamaraj (Prof. & Head/EEE),
Dr. R. Seyezhai (Asso. Profs./EEE),
Dr. R. Ramaprabha (Asso. Profs./EEE),
Dr. M. Balaji (Asso. Profs./EEE).

Number of Participants: Registered – 55

Speakers:

Day 1: "**Basics of Machine Learning Algorithms**" by Dr. P. Vijayalakshmi, Department of Computer Applications, Karpagam Academy of Higher education (Deemed-to-be University), Coimbatore.

Day 2: "**Machine learning for Electric Drives**" by Shri. Sitangshu Sekhar Biswas, Scientific Officer- E Engineer In-charge: Design and R &D, BHAVINI, Kalpakkam.

Day 3: "**Machine Learning Modeling for Solar Power Generation Data using Python**" by Dr. G. Suganya, Associate Professor, School of Computer Science and Engineering, Assistant Director, Software Development Cell, Vellore Institute of Technology, Chennai

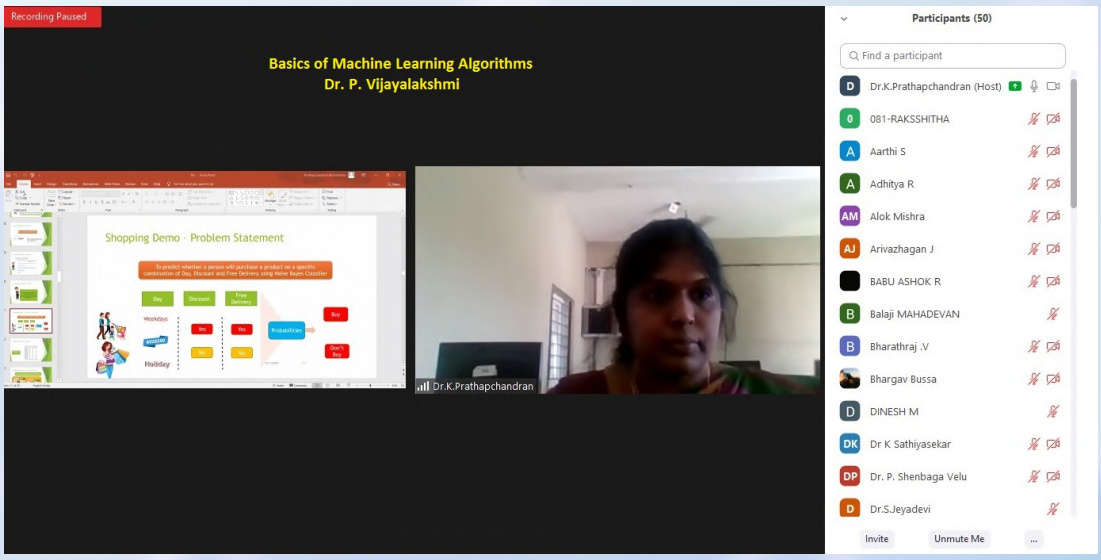


Figure I: Day I

Events Conducted

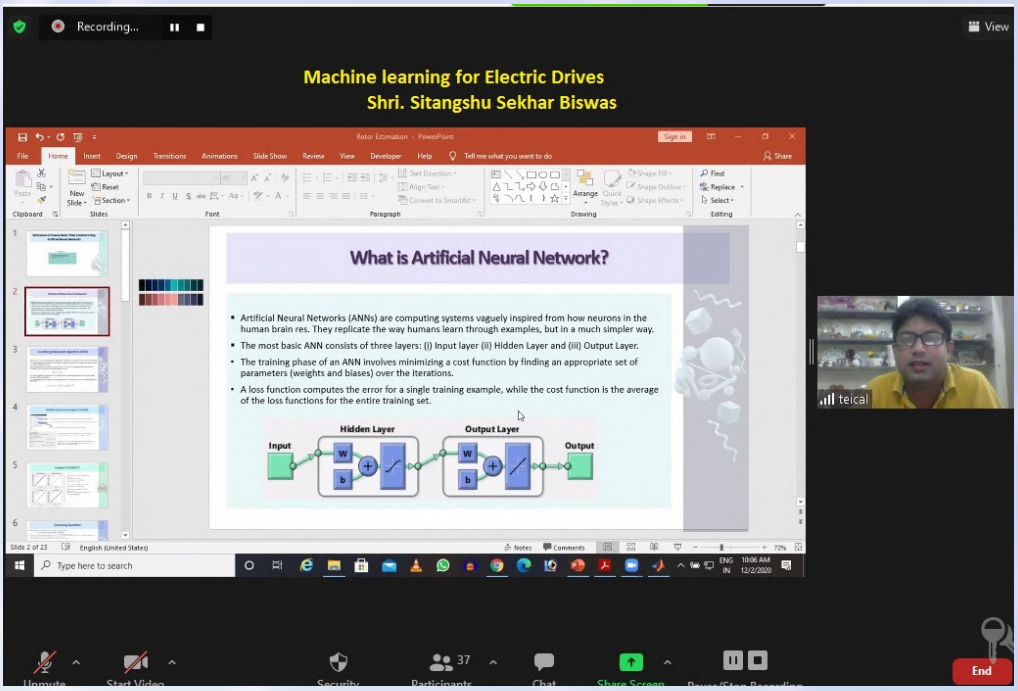


Figure 2: Day 2

Figure 3: Day 3

Other Events

1. Dr. K. Murugesan organized an orientation program for first-year students admitted under rural scholarship scheme from 19.10.2020 to 21.10.2020 in MSIT Block.

2. Dr. R. Deepalaxmi, ASSP/EEE reviewed 2 papers for ICEES 2021.

Other Events

3. Dr. V. Thiyagarajan, ASSP/EEE, has successfully completed the online course titled "Basic Artificial Neural Networks in Python" authorized by Coursera Project Network and offered through Coursera.

4. Dr. V. Thiyagarajan, ASSP/EEE, has successfully completed the online course titled "Motors and Motor Control Circuits" authorized by University of Colorado Boulder offered through Coursera.

5. Dr. V. Thiyagarajan, ASSP/EEE has reviewed the papers submitted for the "Fifth International Conference on Energy Engineering and Environmental Protection (EEEP2020)" organizing in Xiamen, China by November, 17.19.2020.

6. Dr. V. Thiyagarajan, ASSP/EEE has reviewed the papers submitted for the "Virtual International Technical Conference on Control in Electric Vehicles and Smart Grid with Renewable Energy Synergies" (VIT-CES-RES) organizing by VIT University, Chennai in Xiamen, China during October, 29.30.2020.

7. Dr. Muthu Selvan reviewed one paper from the Journal of The Institution of Engineers (India): Series B and one paper from IET Power Electronics.

8. Dr.R.Seyezhai, ASSP/EEE acted as an interview panel member for the first-year admission interview for B.E./B.Tech on 09.11.2020.

9. Dr. R. Ramaprabha, ASSP/EEE attended a 1-day webinar on “Electrical Power Systems, Renewable Energy, Smart Grids & Switchgear Protection using NEPLAN software” on Nov 03, 2020, conducted by IndiaSoft Technologies (P) Ltd., Pune.

Other Events

10. Dr. R. Ramaprabha & Dr. U. Shajith Ali met Dr. Ganesh Samudra (Visiting faculty, EEE/SSNCE) through Zoom platform on Nov 19, 2020. In the brainstorm session the following points were discussed (for the course UEE1405):

-Sequencing of lectures, coordination, and logistics.
-Approach to revise ppt slides and modes of delivery.
-Injecting higher-level logical thinking and creativity.

11. Dr. Rajini, as a coordinator of ISRO - Indian Institute of Remote Sensing (ISRO-IIRS) outreach program, facilitated the following outreach courses.

a. Course on remote sensing applications in Agricultural water management - 31 students attended,4 students took the test series and obtained certificates.

b. Course on Geospatial Inputs for master plan formulation- 2 students attended, taken the test series, and obtained certificates.

12. Dr.R.Seyezhai, ASSP/EEE, Dr.M.Balaji/ASSP/EEE, and Dr.Mrunal Deshpande/ASSP/EEE conducted the project review for projects selected for SSN Innovation Centre on 30.11.2020.

13. Dr. R.Seyezhai, ASSP/EEE, and S.Maheswari (Passed out PG student) published a book chapter titled, “Design of Low Power Energy Harvesting System for Biomedical Devices” in the Electrical, Electronic devices circuits, and materials “, Scrivener Publishing, Wiley, 2020.

14. Dr. K. Murugesan organized Two Days online Certificate Program on Developing EFFECTIVE COMMUNICATION to students admitted under rural scholarship scheme from 1-12-2020 to 2-12-2020 in association with our Alumni associations (Mr. Madhivanan, Joint Secretary of SSN Alumni association). Trainer Name: Ms. Shivangi Narula, Learning and Development specialist, GoalMotiv Academy.

Other Events

15. Dr. V. Thiyagarajan, ASSP/EEE, has successfully completed the online course titled "Psychological First Aid" authorized by Johns Hopkins University and offered through Coursera.

16. Dr. R.Seyezhai, ASSP/EEE reviewed a paper for the International Conference on Electrical Energy Systems, ICEES2021 to be held at SSN College of Engineering, Kalavakkam.

17. Dr.R.Seyezhai, ASSP/EEE acted as Internal Examiner for the Online Anna University Practical examination for VII Sem. EEE, B students on 17.12.2020 & 18.12.2020.

18. Dr.R.Seyezhai, ASSP/EEE has been appointed as an advisory member for the Ninth International Conference on Contemporary Engineering and Technology 2021MARCH 20 - 21, 2021 to be held in Chennai.

19. Dr. R. Ramaprabha & Dr. U. Shajith Ali met Dr. Ganesh Samudra (Visiting faculty, EEE/SSNCE) through Zoom platform on Dec 24, 2020. In the brainstorm session the following points were discussed (for the course UEE1405):
-Sequencing of lectures, coordination, and logistics.
-Approach to revise ppt slides and modes of delivery.
-Injecting higher-level logical thinking and creativity.

20. Dr.R.Seyezhai, ASSP/EEE organized an online meeting to discuss the progress of the part-time scholar Ms. R.Niraimathi on 23.12.2020 through Google meet.

21. Dr. R. Ramaprabha, ASSP/EEE reviewed the following papers: 1 paper for International Journal of Electrical Power and Energy Systems; 1 paper for IETE Journal of Research;1 paper for IEEE International conference (ICEES2021, SSNCE).

Student Article

Promising Road to a Clean Future

Vinu Varshath S of
2nd year EEE B writes,

With the dawn of electric vehicles, the world is becoming a better and a healthier place to live in. It took humanity more than a century to develop something which is more reliable and can actually challenge internal combustion engine cars.

But while we are directing all our energy and concentration on electric vehicles, we shouldn't forget the source of the electricity which we use to charge the vehicles. We have come a long way in terms of clean energy. But there is still leagues ahead of us.

Figure :Strontium-90

Intriguing ways of Energy Production

Nuclear Battery using Strontium-90

Strontium-90's energy spectrum aligns well with **design architecture** already used in crystalline **silicon solar cells**. Another **advantage** of using this Sr-90 is that it is prevalent in nuclear wastes. Researchers believe that using this "**beta voltaic**" cells can generate **1-watt power** for **40 years**, about **40,000** times more than a **Lithium-Ion battery**.

Student Article

Promising Road to a Clean Future

Intriguing ways of Energy Production

Radiative cooling of the sky

Radiative cooling is the process by which a **body loses heat by radiation**. So, the cars, buildings and even the **ground** are relatively **cooler** than the **ambient temperature during the night**. A team of researchers have developed a device which exploits this **temperature difference to generate electricity**. The set-up cost is around $30. It generated around 25 mW per square meter.

Liquid Fuel by CO2 from Air

A Canadian company has started making **liquid fuel by sucking CO2 out of the atmosphere** and **combining it with hydrogen**. In July 2020, the **cost** of one ton of CO2 was around $70-$100 and is **decreasing** with the **advancement of technology** used to **capture CO2**. It is also worth mentioning that the CO2 emitted by burning fuel created by this process is the same as the amount required to produce the fuel. So, it is effectively **carbon neutral**.

It's reassuring to see many researchers take interest in finding new ways to generate clean energy. With the emergence of techniques to generate electricity from glowing jellyfish which can be used to run pacemakers and modern Generation IV nuclear reactor with better efficiency and safety, it is safe to say that we are en route to a promising future.

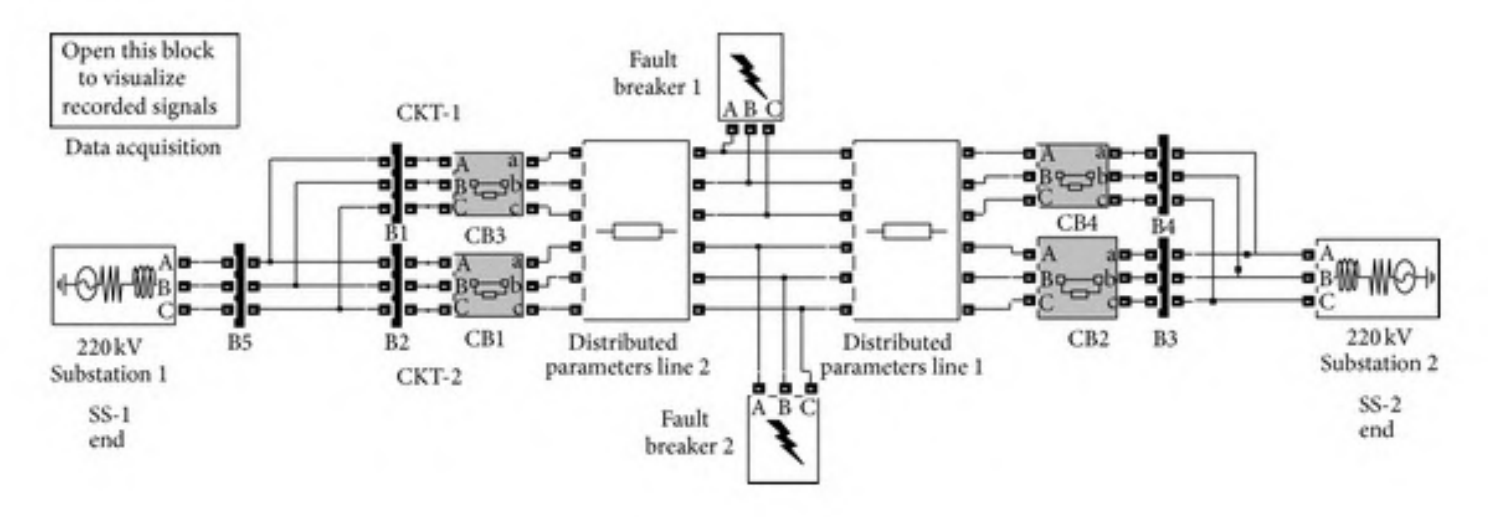
Student Article

AI In Power Distribution System Planning

Ashwini M of
3rd year EEE A writes,

Electrical power distribution is the **delivery of electricity** from the **transmission system to consumers via substation**. Electric power begins from a generating station and is transmitted via primary and secondary levels of distribution whose network configurations are either **radial or network** type.

Figure: Power system model in Matlab



Traditional Vs Modern Take

While traditional distribution lines act as simple lines where electricity comes from transmission networks, the distribution system these days are becoming more efficient and independent from transmission networks by means of **integrating** with **renewable energy generators, using optimization tools, data analytics**, etc.

Power distribution network planning not only takes into account laws, historical rules, geographic specifications, local demands and future uncertainties but also strives to optimize the plans to increase reliability and decrease costs while making trade-offs between efficiency, quality and capacity.

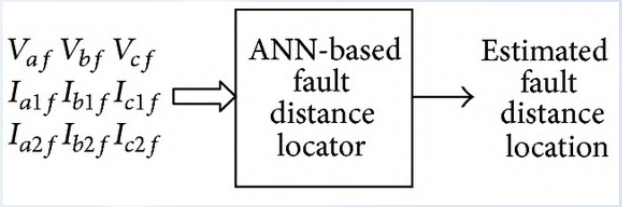
Student Article

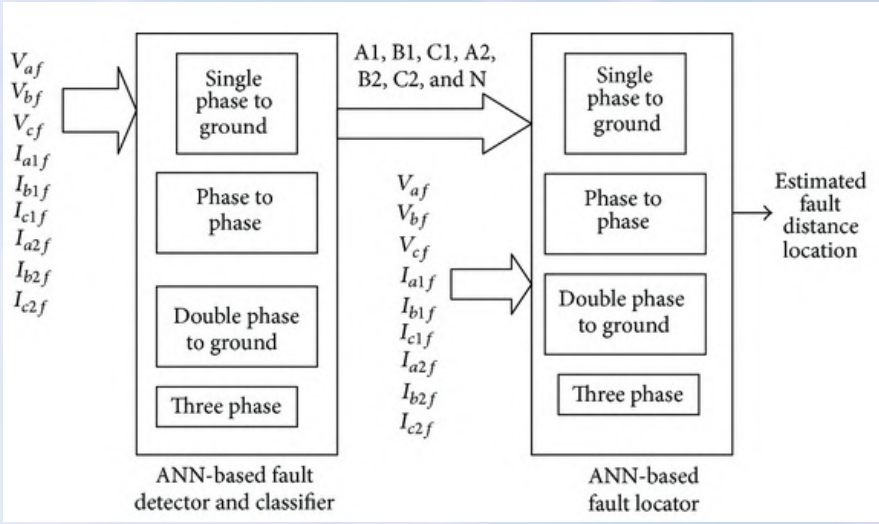
AI In Power Distribution System Planning

Rapid growth in technology also catalyzes the development of improved and advanced algorithms for **network planning,** specifically the usage of **Artificial Intelligence**.

Could Artificial Intelligence learn to mimic human thinking and assist in making decisions in the prospects of power distribution network planning?

1. Yes, but the solution is not as simple as presented. Using Artificial Intelligence alone is not enough - one must incorporate it with other learning algorithms like **Artificial Neural Networks (ANN)**.





2. ANN is defined as a **structured hierarchy** of artificial neurons mimicking biological neurons, except an artificial neuron is a **mathematical function**. The neuron receives input from sensors or other neurons to produce an output.

3. In recent times, ANN research involves the study of **convolutional neural networks** and **deep networks**. These abilities could be transcribed and used in the **collection** and **creation** of information from **power distribution network data**.

4. By deploying mathematical models with the ability of a neural network to decide, value and judge, one can **predict a transformer operation** from the **simple meter** and **sensor readings**.

Student Article

AI In Power Distribution System Planning

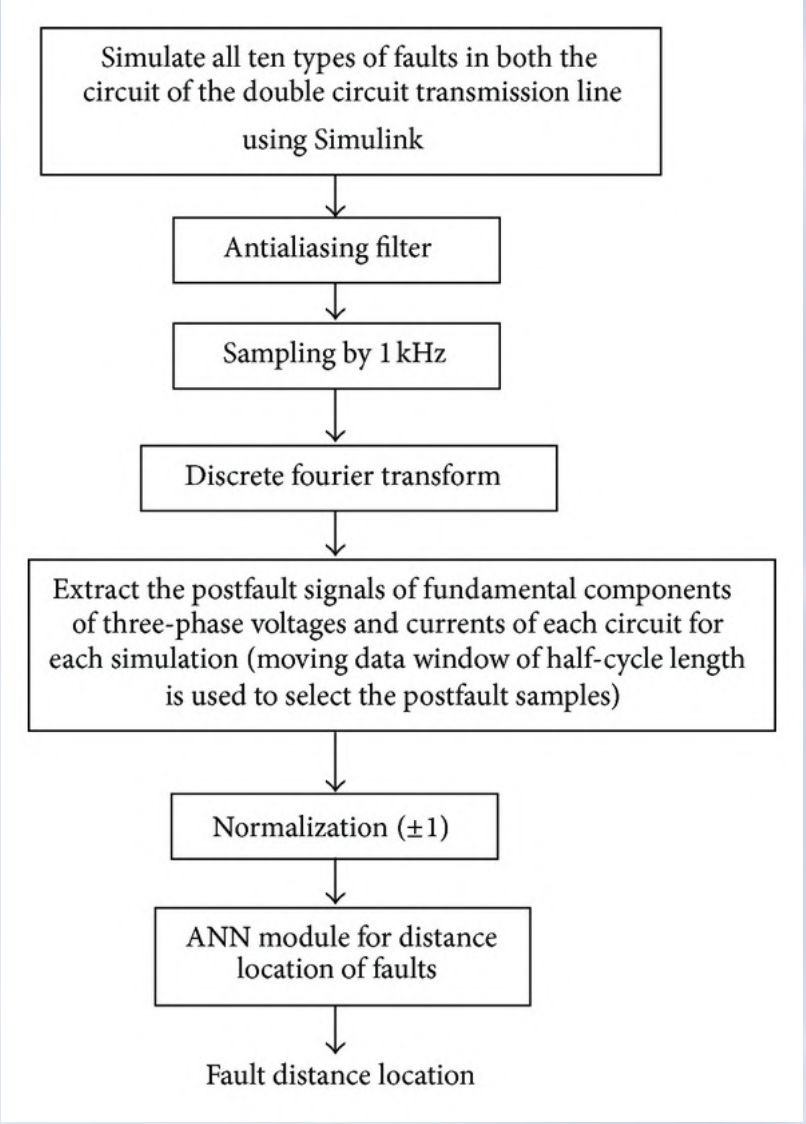
Why neural networks?

- Neural networks could use logic to validate network data, observe the network operation, predict, compare and draw causal relationships.

- The analysis retrieved can be applied in network diagnosis, network planning, preventive maintenance, failure prediction, network attack recognition, etc.

- It can also be used in ethical considerations applied in flow management, asset allocation, attack responses, theft detection and response.

Figure: ANN Based Fault Distance Location



Hence, in theory, a large number of ANNs could replace a sizable amount of all human tasks that contain learning, including the task of planning, network operation, grid decisions and investment decisions. The study can thus be used as a basic prototype by any Electrical Industry for further research by using advanced AI algorithms, and ANN models.

Student Article

Making Wired Transmission Go Haywire

Harshini J of
2nd year EEE A writes,

Who wants all those messy wires and tall poles when the **power transmission** can be done through the air without worrying about power failures even during bad weather condition? People still think that it can be used to power only small devices like mobile phones, laptops etc. But researchers didn't want to limit themselves and wanted to think beyond the horizon and find a way to **transmit power** in a **wireless** fashion to long distances.

This resulted in a **novel solution** for transmitting the power generated in one region to far off places through **microwaves**. This is definitely a breakthrough in the field of **wireless power transmission** as it would be really helpful in **electrifying the rural areas** and other **inhospitable terrains** where there aren't enough resources and infrastructure to generate the electric power required to cater the needs of the residents in that locality.

This technology was made possible by a group of people from New Zealand. According to the statement given by researchers from Emrod technologies, it has been proven that their technology to transmit power through microwaves can transmit about **one hundred times more power than wired transmission system**, which is mind-blowing right!

Student Article

Making Wired Transmission Go Haywire

So, here's how the system works, it basically consists of four components:·

- Power source
- A transmitting antenna
- Several transmitting relays
- A Rectenna

The **transmitting antenna** converts the **power source** into **microwave energy** and converges the beam which passed through the air and is caught by the **rectenna** which converts it back to **electrical energy**.

The system also uses a **LASER** net to **detect an obstruction** and shuts down until the hurdle is removed. The cherry on top is that it **reduces** the **transmission losses** to a great extent by using recently developed metamaterials and using a lens like relays to focus the beam and providing lossless transmission. Although its efficiency is a bit lesser than copper, this module is an economically viable option.

One of the futuristic use cases for the long-range wireless transmission includes beaming power from space to earth, charging unmanned aerial vehicles without requiring the UAV to return to a base for charging!

This innovation might be the beginning of an era of the "World going WIRELESS"! There's still a lot of dimensions which need to be unfurled in regards to this concept of wireless power transmission. Venture and explore the beyond!

Student Article

The 5 Minute Charging Battery

Neythra Jayaprakash of 3rd year EEE A writes,

The buzzing news around the **Electric vehicle Industry** is the **5-minute charging battery**. This research is really stirring because one of the **major disadvantages** around EV vehicles was the huge **amount of time** it took to be **charged** and it was not considered feasible in today's fast-moving world.

The company who has made this revolutionary study is called StoreDot and is situated in Israel. They produce **Lithium-Ion batteries** and have been making them for scooters, drones and phones in large number. They are specialists in extreme fast charging (XFC) battery technology and are releasing the first production batch of sample cells, which can offer ultra-fast charging to a number of other industries, such as commercial drones and consumer electronics.

The Innovation

They **replaced** the **graphite rods** with **silicon rods**. The graphite rods when rapidly charged get congested and may cause a **short circuit**. The silicon rods did not have this problem since these **nanoparticles** move more easily and also they proved to be far less cheap. The current productions are using Germanium but silicon replacements are expected later in the year. The **Germanium nanoparticles** are also **water-soluble** and **easier to handle** while manufacturing.

Student Article

The 5 Minute Charging Battery

Another company called QuantumScope has also done some real work. They don't use **Lithium-Ion batteries** but **solid ceramic ones**. This type produces **increased energy density, lower costs and lesser fire hazards**. But the disadvantage with QuantumScope is that it takes 15 mins to charge to 80% which is lesser than StoreDot.

The number one barrier for adoption of Electric Vehicles in no longer cost but range anxiety. A study says that most drivers are afraid that they might get stuck on a highway or take an hour to charge up the car.

Another major obstacle will be in the hands of the various governments around the world. The existing petrol bunks and stations need to be upgraded to make way for the EV charging stations since the current battery charging stations don't have the capacity to charge a battery in 5 minutes.

Students who are really passionate about this subject can make a really good career out of it in the coming years. Suggested topics to focus on would be **Battery Pack, Power inverter and controller, Electric Traction motor and Charging system.**

Alumna's words

Looking Back Into The Meadow of Memories

I have always dreamt of being a student of SSN and graduate from here. And now it's giving me immense pleasure to pen down my reminiscences as an alumna. I joined my Bachelor's degree in Electrical and Electronics department in 2013. This has been the best place which has nurtured me both technically and personally. The staff here played a vital role in helping me gain my knowledge. They have always supported the ideas and guided everyone to bring the best from them. The teachers have always been a pillar of support in all the activities to upscale one's hidden talent and bring them to the limelight.

The symposiums, Eupraxia and the cultural events have always been well planned and neatly executed which never failed to impress us with fun and frolic. I have had the best times of my college while being a member in deco club. I have been the Head of deco at the department level, Instincts, Invente and finally, as a core committee member. I have actively engaged myself in the extracurricular activities which gave me more insight on how to harness my potential. With the skills I learnt in SSN, I won International Awards in Drawing and Painting and proudly represented our Country. My paintings have been exhibited at multiple National Art Exhibitions. In fact, I was invited as a judge for SSN Fine arts event after completing my college, which has been a proud moment for me.

Investment in knowledge always pays the best interest.

Alumna's words

Looking Back Into The Meadow of Memories

This place has helped me to interact with diverse people and has enhanced my perspective on the way people think. The interactions with my staff make me understand my flaws and mould myself. SSN provides various opportunities for the students to know their calibre in choosing their next appropriate step in their career. We have had multiple campus recruitments in which the management has always ensured no student is left behind without having an opportunity. The mock tests and interviews have helped a lot in concentrating on the areas where there is a lag and put on additional effort.

My piece of advice would be to learn your responsibility right away from college. Pick a task and give your 100%. I have gained more confidence now to express my ideas and innovation in presenting papers which are lauded by a wider audience. I would like to conclude by saying in SSN I was not grown, I was sculpted into a better human being that I am now. Learn to be strong and independent. Remember, the only person who can keep you happy is 'YOU'. Work on your goals independently. Even if you fail, take it as a stepping stone. It will give you an insight into the mistakes that must not be repeated next time and make you a better person.

Sowmya Jayapalan ,Batch of 2013-17

Editorial Team