

VIDYUT

♣ JULY – DECEMBER ♣ 2022

The Official Newsletter of Department of
Electrical and Electronics Engineering at SVCE

Optical Current Transformer (OCT)



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

NEWSLETTER

EDITORIAL TEAM

Dr. KR. Santha, Professor & Head
Dr. Sudhakar K Bharathan, Professor
Dr. R. Karthikeyan, Associate Professor
Ms.S. Sinthamani, Assistant Professor
Ms. K S. Pavithra, Assistant Professor

Mr.A.Akash, IV year
Mr.M.Adithyan, III year
Mr.S.Sabari & Ms.N.Harini, II year

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SRI VENKATESWARA COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Vision of the Institution

To be a leader in Higher Technical Education and Research by providing the state-of-the-art facilities to transform the learners into global contributors and achievers.

Mission of the Institution

To develop SVCE as a "CENTER OF EXCELLENCE" offering Engineering Education to men and women at undergraduate and postgraduate degree levels, bringing out their total personality, emphasizing ethical values and preparing them to meet the growing challenges of the industry and diverse societal needs of our nation.

Vision of the Department

The vision of the Electrical and Electronics Engineering Department is to provide a high standard of education in Electrical and Electronics Engineering so as to meet the industry standards through domain.

Mission of the Department

M1: To create state of the art facilities such that the students excel in Electrical and Electronics Engineering education.

M2: To equip students with a well-defined curriculum to meet the requirements of industries and society.

M3: To promote a culture of research, innovation and entrepreneurship in the thrust and allied areas of Electrical and Electronics Engineering.

M4: To inculcate soft skills and foster ethical values and shape the total personality of the students.

Program Educational Objectives (PEOs) UG-EEE

PEO1: Graduates will serve as engineering contributors in the emerging fields of Electrical and Electronics Engineering

PEO2: Graduates will become entrepreneurs through human centered design thinking and innovation.

PEO3: Graduates will be successful in pursuing higher studies in engineering or management.

PEO4: Graduates will be effective and ethical team players in the field of green energy management and sustainability.

Program Outcomes (POs) for UG-EEE

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and lead.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) for UG-EEE

PSO1: The ability to build, implement, test and maintain analog and/or digital systems and implement electronic control of Drives for Industrial automation and Electric Vehicle.

PSO2: The ability to analyze Power System networks encompassing stability, control and protection and interconnection of Renewable Energy Sources with Micro and smart grid.

Program Outcomes (POs) for PG-PED

PO1: Ability to independently carry out research/investigation and development work to solve practical problems.

PO2: Ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

Program Specific Outcomes (PSOs) for PG-PED

PSO1: The ability to design and analyze Power Electronic converters and control of Electric drives for Industrial applications.

PSO2: The ability to apply Power Electronic Circuits in Transmission and distribution network of Power System and interconnection of Renewable Energy.

AN ARTICLE ON “EVOLUTION OF LIGHT VEHICLE ELECTRIFICATION”

Light Electric Vehicles (LEVs) - another technology that is flourishing with a world-changing potential for the emission-free solutions for the rising megacities. Increased urbanization, traffic congestions, poor air quality and lack of mobility options call for affordable and clean transportation alternatives. The new technologies applied to and the new materials built into today’s LEVs enable greater power efficiency, smaller size, lighter weight, and lower cost solutions.

Due to an extremely simple configuration both their functioning and handling are easy to understand. They can be charged from the grid (e.g. power plugs in private homes) without necessarily requiring installation of a specific charging infrastructure. The intended users are those driving short distances at lower speed. Depending on the purpose of use there are variants with and without space for carry-on items. And most importantly, they fulfill the zero emissions mandate.

Advantages of LEVs are,

- ✚ Low-priced affordable mobility solutions
- ✚ Simpler configuration for easy handling and maintenance
- ✚ Reuse of the existing power grids and infrastructure
- ✚ Enhanced mobility in city areas
- ✚ Emission-free operation



Major challenges to be addressed in the LEV industry: Less lifetime expectations, reduced battery capacity.

ACHIEVEMENTS AND AWARDS BY THE FACULTY MEMBERS

BEST TEACHER AWARD

Dr.M.Sankar, Assistant Professor

Recipient of SVCE - Best Teacher Award (2021-2022)



It is a privilege to share my perspective,

In our education system, children or youngsters dwell in school or colleges quantitatively six hours a day. The time they spend with their teachers or professors is more than that they spend with their parents. In this context, teachers or professors have the prime responsibility of making young minds explore their field of interest, build strong fundamental knowledge and expertise in the same. Apart from making them expertise in their field of interest, the teachers or professors also have another important responsibility of building human values in every young mind.

To make an individual expertise in their field of interest, the teacher or professor should be very strong and up to date in their subject. They should create interest in students to analyze problem statements and provide innovative solutions, thereby the students inculcate traits of giving optimal solutions to the society. To develop human values in students, teachers or professors should sacrifice a lot and live an honest life as students admire them as their role models.

I recollect the saying of Dr. A.P.J. Abdul Kalam, because no human being on earth can have thought of molding the young minds as him:

“My message, especially to young people is to have the courage to think differently, courage to invent, to travel the unexplored path, courage to discover the impossible and to conquer the problems and succeed. These are great qualities that they must work towards. This is my message to young people.”

Students should value their tradition, parents and education. They should excel in any one skill set to generate right revenue. They should inculcate good human values and live an honest life.

Interaction between SVCE and IIT Madras

Faculty members from the Department of Electrical and Electronics Engineering got selected to execute projects at IIT Madras under Indian Nano Electronics User Program (INUP) supported by the Ministry of Electronics and Information Technology (MeitY), GOI.

They will execute various projects under INUP scheme, and utilize the nano fabrication and characterization facilities established at the Centre for Nano electromechanical Systems and Nano Photonics (CNNP), IIT Madras for a maximum period of 6 months.

Faculty members selected

Mr. S.Sudharsanam,
Assistant Professor

Mr. M.Ranjith Kumar,
Assistant Professor

Mrs .S. Sinthamani,
Assistant Professor



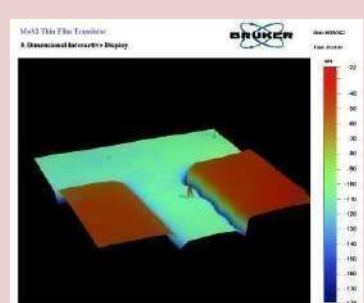
Supervisor

Dr.Sudhakar K B, Professor and Coordinator/INRC

iNRC, SVCE

CNNP, IIT Madras

Nano Device



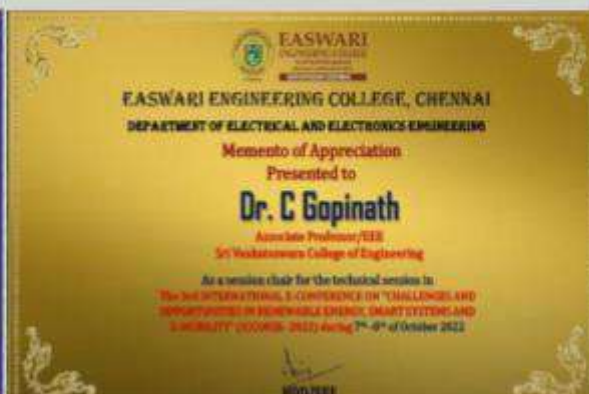
Dr. KR. Santha, Vice-Principal, IIC President, visited Kongunadu College of Engineering & Technology, Tiruchy, as an expert member to review their Innovation Cell activities as part of Mentor Mentee scheme on 18th August, 2022. She addressed the dignitaries and also handled sessions on Innovations in Engineering.



Dr. C. Gopinath, Associate Professor, acted as session chair in the three-day International conference on “Sustainable Materials and Technologies for Bio and Energy Applications, SMTBEA-2022” during 13th -15th July 2022 at SSN Institutions, Chennai.

Dr.C.Gopinath, Associate Professor, acted as session chair for an International conference “Challenges and Opportunities in Renewable Energy, Smart Systems And E-Mobility” (Iccorse- 2022) held at Easwari Engineering College during 7th -8th October 2022.

Dr.C.Gopinath, Associate Professor, also acted a resource person for a special lecture on “Intellectual Property Rights - Overview, patent criteria, patent search and filing procedure” organized by Alagappa Chettiaar Govt. College of Engineering on 18th August, 2022.



VIDYUT-JULY-DEC 2022

Dr. Kamal, Assistant Professor, submitted a project proposal to the Central Power Research institute (CPRI), Ministry of Power, Government of India, Bangalore under the Research Scheme on Power (RSoP), titled as "Design of Deep Recurrent Neural Network Based Medium Term Load Forecasting with Clustering Based Hybrid Feature Selection in collaboration with Rajiv Gandhi National institute of Youth development, Ministry of Youth Affairs & Sports, Government of India, Sriperumbudur.

He also acted as session chair in the IEEE (Madras section) sponsored First International Conference on Computer, Power and Communication held at Sri Sairam institute of technology Chennai from 14th -16th December, 2022.



Dr. Venkatesh RJ, Assistant Professor, was conferred with the **International Teacher of the Year** award by the Global Edu-Conclave 2022 held virtually on 25th December 2022, organised by International Institute of Organized Research - IZOR and Green ThinkerZ in association with Centre for Smart Modern Construction, Western Sydney University, Australia, Prof. G.D. Agrawal Centre for Scientific Development and Environment Advocacy, The Intelligent Indian, Sustainable Cosmos, Wakelet, IJRECE, TRJ, SusCos Academy, Elsevier's Mendeley.

AWARD WINNER

GLOBAL
EDU-CONCLAVE
AWARDS

25 DECEMBER 2022



INDIA

Dr. R J Venkatesh

Sri Venkateswara College of Engineering,
Sriperumbudur, Tamil Nadu, India

TEACHER AWARD

organizers





**INTERNATIONAL TEACHER OF THE YEAR
AWARD 2022**

presented to
Dr. R J Venkatesh
from
Sri Venkateswara College of Engineering
Sriperumbudur, Tamil Nadu, India

during Global Edu-Conclave 2022 held virtually on 25 December 2022 organised by International Institute of Organized Research - IZOR and Green ThinkerZ in association with Centre for Smart Modern Construction, Western Sydney University, Australia, Prof. G.D. Agrawal Centre for Scientific Development and Environment Advocacy, The Intelligent Indian, Sustainable Cosmos, Wakelet, IJRECE, TRJ, SusCos Academy, Elsevier's Mendeley


H. Kaur
 Coordinator
 IZOR India


Er.T. Singh
 President
 Green ThinkerZ


Dr. S.N. Mehta
 Director
 IZOR India

Green ThinkerZ® is Registered at NGO Darpan,
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IZOR is Registered MSME with Ministry of MSME,
Govt. of India (UDVAM-PB-20-0002405)

GEC2022-0086

PATENTS PUBLISHED

- Dr. C. Gopinath and Dr. T. Annamalai, Associate Professors, EEE and Dr.C. Yaashuwanth, Associate Professors, INT, filed a Design patent titled “Detachable Solar Heater”, in IPR; Kolkata.
- Dr. C. Gopinath, Associate Professor, Dr. D. Ashokaraju, Dr. P. Prabhavathy, filed and published a patent titled “Methods of Executing Multiple Functions Functions by More than One Camera connected with Electronic Device”, in IPR;Chennai.
- Dr. C. Gopinath, Associate Professor, Mr. D.S. Purusthothaman, Assistant Professor, with finalyear students Mr. A. Ramanathan, MEC, Mr. N.S. Sri Balaji,ECE, Mr. MFJ. Irfan Abdullah,
- Mr.MA. Mohamed Ashiq Ilahi filed a patent titled “A System and Method for Ensuring Safe Drive in the Vehicle using Pollution-Less Ultrasonic Horn”, in IPR; Chennai

SPECIAL ACCOMPLISHMENT

Mrs. Akila S, Assistant Professor, successfully completed a 5-days course on the theme “Inculcating Universal Human Values in Technical Education Technical Education” organized by AICTE from December 19th - 23rd , 2022.



JOURNAL PUBLICATIONS



- **Dr. R. Karthikeyan, Associate Professor, K. Vijayakumar G. Premsunder, A.J. Basanth,** published a paper “A Soft Magnetic Composite Blank for Switched Reluctance Motor:Vibration and Acoustic Noise Study,” in Journal of Vibration Engineering & Technologies.2022 **doi:10.1007/s42417-022-00718-2.**

Purpose

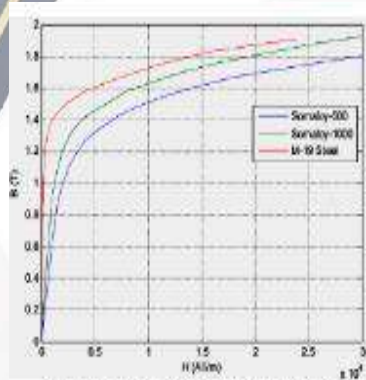
This paper presents a contemporary direction on the reduction of vibration and acoustic noise in Switched Reluctance Motor (SRM) using Soft Magnetic Composite (SMC) blank.

Methods

Soft magnetic composite materials are composed of iron powder and resin. The particles are compacted, together with a lubricant and possibly a binder, at high pressure into a bulk material. Soft magnetic composite materials are characterized by three-dimensional isotropic ferromagnetic behavior and very low eddy current loss. The competence of Soft Magnetic Composite (SMC) material in Switched Reluctance Motor (SRM) on vibration related issues has been investigated through Finite Element Analysis and experimentation.

Results

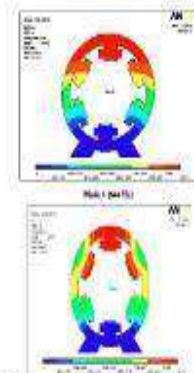
To analyze the magnetic, vibration, and acoustic noise characteristics two motor configurations, viz., M19-SRM (M19- Switched Reluctance Motor) and SMC–SRM (Soft Magnetic Composite - Switched Reluctance Motor) are considered. The key results are shown below.



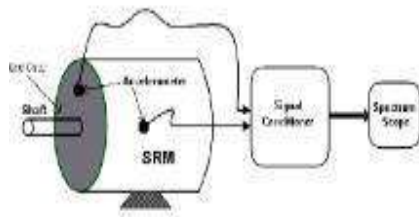
Comparison of $B-H$ characteristics frequencies



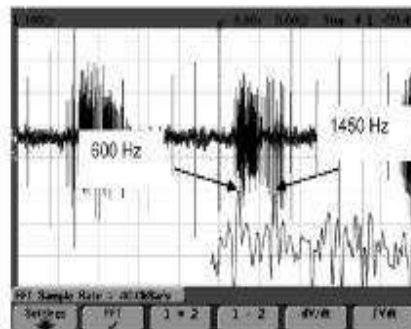
Rotor and stator of a three phase SMC-SRM



Stator mode shape



Experimental setup



Acceleration on stator surface and its spectrum

Conclusion

The efficacy of the SMC-SRM (Soft Magnetic Composite - Switched Reluctance Motor) prototype in vibration mitigation has been validated.

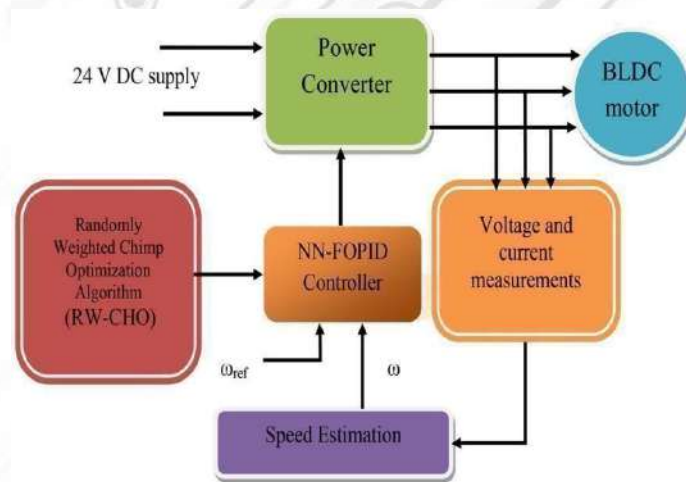
- **Dr. KR. Santha, Professor & Head, D. S. Purushothaman, Assistant Professor**, published a paper “Artificial Neural Network with Optimized FOPID for Speed Control of Sensor less BLDC Motor Drive,” in Journal of Cybernetics and Systems, pp. 1-23, doi.org/10.1080/01969722.2022.214892.



Purpose

At present, Brushless Direct Current (BLDC) motors are frequently used owing to its features such as fast dynamic response, speedy and elevated efficiency, reliability, durable and noise free operation and reduced electromagnetic interference (EMI). This work proposes the speed control of Sensor less BLDC motor for industrial/Domestic applications.

Block Diagram



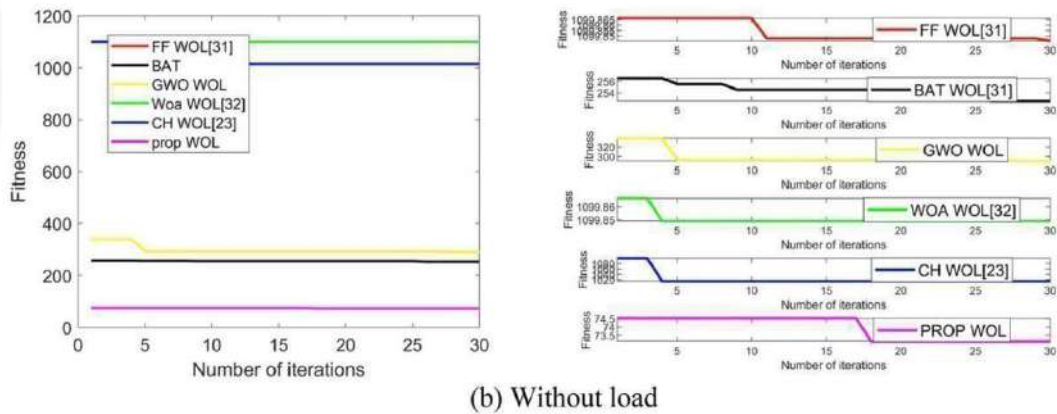
Methods

This work proposes an Artificial Neural Network (ANN) with optimized Fractional-order Proportional Integral Derivative (ANN-FOPID) controller in which the artificial neural networks are a better way to recognize patterns from the sample of the system that is going to be controlled. Particularly, the gain of FOPID controller (K_P , K_I , K_D , λ , μ) will be optimally tuned by a Random Weighted Chimp Optimization Algorithm (RW-CHO) which is the conceptual improvement of classical Chimp Optimization Algorithm (ChOA). As a result, the sensor less BLDC motor drive provides better rotor speed control and speed control accuracy.

Stability Analysis with Load

The proposed method's stability analysis for attaining the desired speed control using optimal ANN-FOPID controller with the RW-CHO method was assessed here. In this case, responses such as "rise time, settling time, settling minimum, settling maximum,

overshoot undershoot, peak and peak time” were attained under load condition as presented. Moreover, the computed time response should be as low as possible, and RW-CHO proves that the proposed model is superior. The key results are shown in the figures below.



Convergence analysis of proposed method over the traditional methods (a) with load (b) without load.

Conclusion

A novel Artificial Neural Network with optimized Fractional Order Proportional Integral Derivative (ANN-FOPID) controller for sensorless speed control of BLDC motor is developed. The gain parameters of the FOPID controller were optimized with the help of a novel meta-heuristic algorithm known as the Random Weighted Chimp Optimization (RWCHO) algorithm. Thus, the simulation results, shows that the ANN based FOPID controller has improved performance and good controllability than existing PID, FF, WOA and CH models.

- **Dr. KR. Santha, Professor & Head and Rajalakshmi S, Assistant Professor, CSE** published a paper “Hybrid Recommender System Using Systolic Tree for Pattern Mining,” in Journal Computer Systems Science and Engineering 2023. vol. 44, no.2, pp.1251–1262, 2023.

Purpose

- This paper presents a hybrid recommender system to recommend Top-N items that uses the RFD (River Formation Dynamics) for feature selection and Systolic Tree frequent pattern mining with Collaborative Filtering with higher average precision and recall.

Methodology

The feature selection's objective is to pick a feature subset having the least feature similarity as well as highest relevance with the target class. This will mitigate the feature vector's dimensionality by eliminating redundant, irrelevant, or noisy data. The new hybrid recommender system is based on optimized feature selection and systolic tree. The features were extracted using Term Frequency-Inverse Document Frequency (TF-IDF), feature selection with the utilization of River Formation Dynamics (RFD), and the Particle Swarm Optimization (PSO) algorithm. The systolic tree is used for pattern mining, and based on this, the recommendations are given.

Results

The proposed methods were evaluated using the Movie Lens dataset, and the experimental outcomes confirmed the efficiency of the techniques. It was observed that the RFD feature selection with systolic tree frequent pattern mining with collaborative filtering, the precision of 0.89 was achieved.

Conclusion

This work is the initial investigation that forms the basis for exploring hybrid algorithms to improve the metaheuristic algorithms effectiveness for recommendations.

- **Dr. K. R. Santha Professor & Head and Athappan Muthuraman, Assistant Professor, ECE** published a paper "A delay efficient hybrid parallel prefix variable latency CSKA based multi-operand adder with optimized 5:2 compressor and skip logic," in International Journal of Electronics, doi: 10.1080/00207217.2022.2081994.



Purpose

The arithmetic addition operation plays an important role in most digital circuits. The effectiveness of such systems is particularly influenced by the adder blocks when they are integrated in hardware. The MOAs are broadly utilized in recent low power and delay efficient VLSI devices of image/signal processing solicitations like machine learning structures. Binary tree adder is considered as a modest MOA, which adds multiple operands with the help of two operand adder units in the binary tree structure.

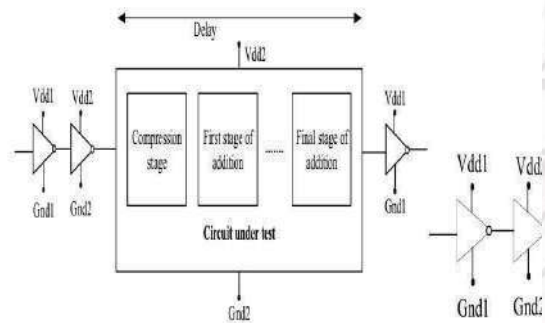
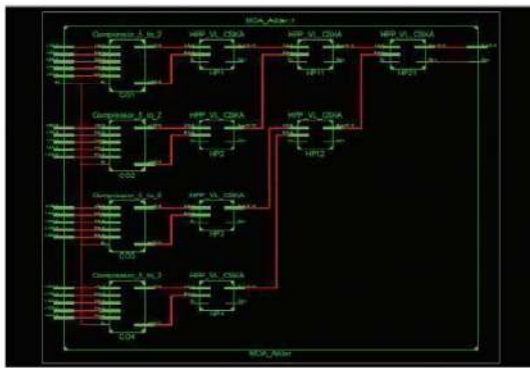
Methodology

An optimized 5:2 compressor is initially used to increase the speed of MOA by reducing the number of operands before giving as input to VL-CSKA. Also, the VL-CSKA is modified by replacing the carry propagation with complementary complex gates (CCG) and nucleus stage with improved parallel prefix structure for increasing the speed with fewer components.

Conclusion

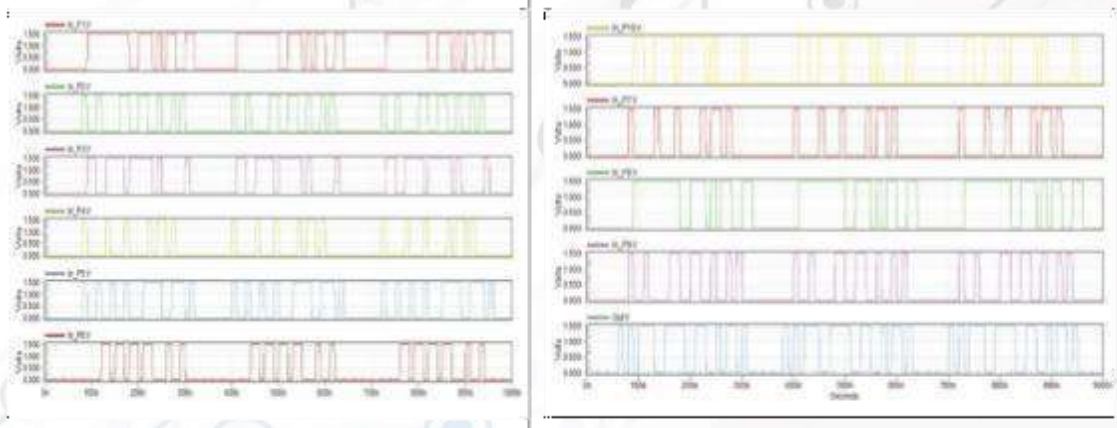
In this work, a delay efficient MOA has been designed using HPP-VL-CSKA and 5:2 compressor logic. The proposed adder reduced the number of stages required to execute the entire addition process by optimizing the 5:2 compressor. Also, a CCG-based HPP-VL-CSKA has been proposed for reducing the adder structure's critical path delay. Also, the delay of the suggested adder design has been further improved by modifying the nucleus stage with improved group PG logic. The FPGA simulation results and comparison prove the proposed adder as an efficient adder as it reduces the computational complexities in terms of area, delay and switching power. Also, the ASIC synthesis results proved that the proposed CCG-based HPP-VL-CSKA achieved 11.78% and 48.98% less area and energy than that of the best

RCA-BTA design.



RTL

Simula



Simulation Results

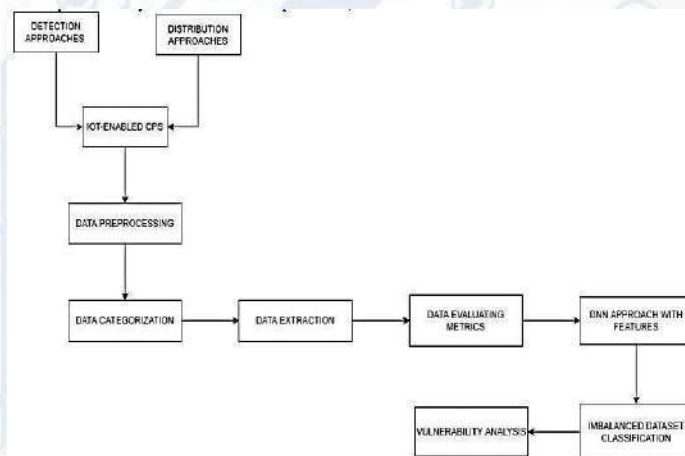
■ **Dr. R.J. Venkatesh, Assistant Professor, N. Juliet, Dr. A. Nalini, Dr E. Sheeba Percis**, published a paper “IoT- Enabled Cyber Physical Systems detection approaches and distribution of cyber-attacks,” in International Journal of NeuroQuantology, 2022 ,Vol. 20, Issue 9, pp. 4139-4145, doi: 10.14704/nq.2022.20.9.NQ44474. (SJR = 0.29, ISSN: 1303 5150).



Purpose

Internet of Things has led to a major surge in sensor networks, green infrastructure, including Industry 4.0, that all perform complicated data analysis of personally identifiable information that will be safeguarded against cyber security assaults. Advances in the field, including such smart buildings, medicine, electricity, farming, robotics, and heavy industries, have seen an upsurge in cyber security assaults.

Proposed IoT-enabled cyber-physical systems (CPS) can always be a problem because authentication mechanisms designed for standard information / operational technology systems do not succeed in CPS environments. As a result, the study adopted a cyber- intensive detection mechanism and identification method using CPS with an emphasis on control systems. These proposed attack detection and identification systems provide the basis for maintaining the security of CPS IoT systems.



$$\text{Precision} = \frac{TP}{TP+FP}; \text{Recall} = \frac{TP}{TP+FN}$$

$$\text{Accuracy} = \frac{TP+TN}{TP+FP+TN+FN};$$

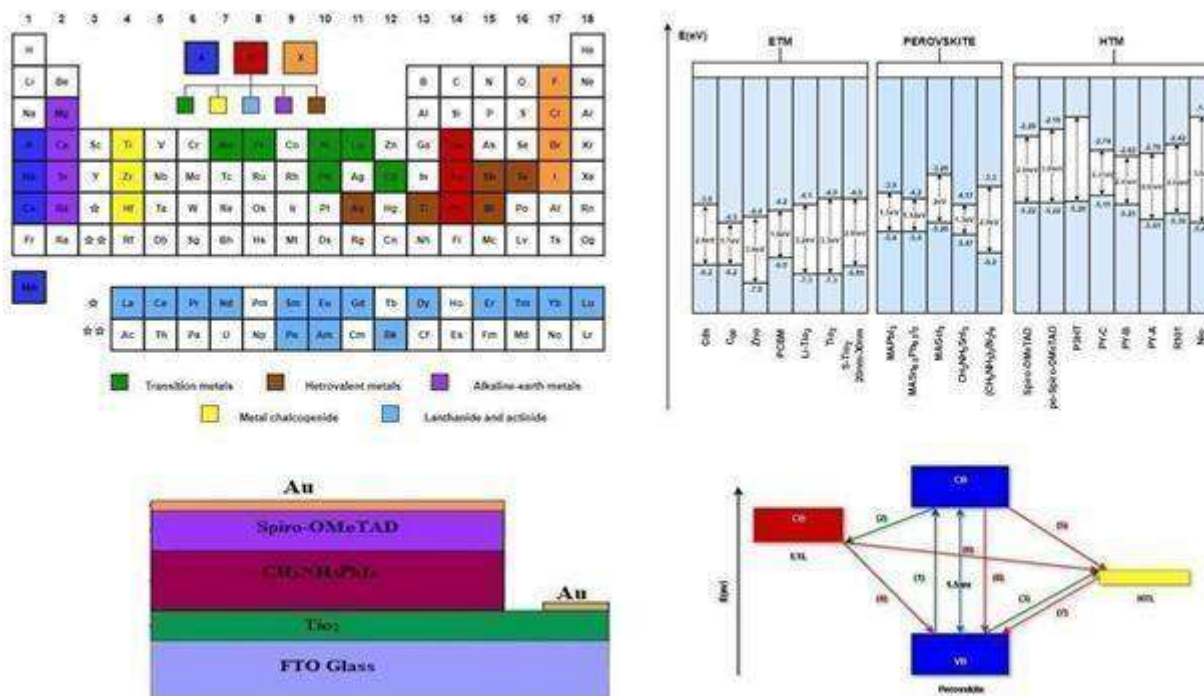
$$F1 - \text{Measure} = \frac{2 \times \text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}}$$

- **Naveen Kumar E, Assistant Professor, Hasan I, Joshi S, Subbaya KM**, “Developments in Perovskite Materials Based Solar Cells: In Pursuit of Hysteresis Effect, Stability Issues and Lead-Free Based Perovskite Materials,” *Nanoscience and Nanotechnology*, Volume 12, Issue 3, 2022.

Purpose

Over the past few years, significant advances in science and technology have occurred in the field of Perovskite-based Solar Cells (PSC), which has sparked significant interest in next generation photovoltaic technologies. Perovskite solar cells, which have a current certified power conversion efficiency of 25.5 %, are the first solution processed photovoltaic to outperform silicon- based photovoltaic technologies. Perovskite solar cells are comparable to Silicon-based solar cells due to their low-cost fabrication techniques and high efficiency. Nevertheless, the research community is still concerned about future design optimization, series degradation issues, stability, and practical efficiency restrictions. As a result, comprehensive knowledge of the perovskite solar cell's operating mechanism and operating Principles is more important than ever before applying these technologies in the real world. Recent research findings in the material science of innovative halide perovskites, as well as numerous architectures based on alternative materials for lead-free perovskites, band-gap engineering, impact of materials on various Electron Transport Layers (ETL) and Hole Transport Layers (HTL), device instability and J-V hysteresis issues of perovskite solar cells are the focus of this study. In order to better understand the potential of perovskite solar cells, factors such as hysteresis, interface engineering, device stability, and a variety of recombination processes are being investigated. For future optimization of perovskite solar cells, the following review findings provide a clear focus for current research needs and future research directions to address issues and understand the working potential of the perovskite solar cells

Graphical Abstract



Conclusion

In this review article, we have presented a brief discussion on organic- inorganic-based lead halide perovskite-based solar cells, lead-free-based perovskite materials, electron transport materials, hole transport materials, types of recombination, hysteresis effect, and stability issues which provides deep insights for researchers for future optimization of device architecture. However, the larger band gaps and low absorption range of alkaline earth materials such as Ca, Sr, and Ba are not considered for photovoltaic applications. Bismuth- based perovskite, with its excellent optoelectronic properties, structural diversity ranging from 1D to 3D with a tunable bandgap in the visible spectrum range, makes it a promising alternative for lead- free perovskite. However, the environmental stability of bismuth is high when compared to germanium and tin- based perovskites.

PAPER PRESENTED IN CONFERENCE

- **Dr. Sudhakar K B, Professor, Ms. Anitha S, Assistant Professor, Mr. Ranjith Kumar M, Assistant Professor**, “Modeling and Simulation of a Si/ZnO based Heterojunction Photodetector,” in International Conference on Recent Advances in Materials and Manufacturing (ICRAMM 2022), Velalar College of Engineering and Technology, 8th December, 2022.
- **Dr. Sudhakar K B, Professor, Sasikala M, Assistant Professor, Rishi Kumar D, Yuvakishore K, Vignesh P, Final year** presented a paper “Modeling and Simulation of Ga₂O₃ Thin Film Solar Blind UV Photodetector,” International Conference on Recent Advances in Materials and Manufacturing (ICRAMM 2022), Velalar College of Engineering and Technology, 8th December, 2022.
- **Dr. Bharathi Dasan SG, Associate Professor, Dr. Sankar M, Assistant professor and Mr. Aakash S, Final year** presented a paper titled “Adaptive Distance Protection for Smart Grids with In-feed Compensation using Synchronized Phasor Measurements” in the 2022 International Conference on Smart Generation Computing, Communication and Networking (SMART GENCON) IEEE Bangalore section 23rd -25th December 2022.
- **Dr. Sundararaman K, Associate Professor, Dr. Sethuraman S S, Associate Professor and Mrs. Suganthi K, Assistant Professor** presented a paper titled “A Topology Review of LED Drivers without Electrolytic Capacitors” in the 2022 IEEE International Conference Power and Renewable Energy Conference (IPRECON), an IEEE IAS club of 6 technical paper conference, IEEE student branch, College of Engineering, Karunagappally 16th -18th December 2022

Research Center Activities



- Ms. N. Shanmugavadivu, Research scholar and Assistant Professor, defended her Ph.D thesis titled, "Design of Dual Input Multi Output Boost Converter for Grid Connected Micro-Inverter Applications" on 10th October, 2022 at Seminar Hall, EEE Department, SVCE under the guidance of Dr. KR. Santha, Professor & Head, EEE,
- Mr. I Venkatraman, Research scholar, Anna University, Chennai, defended his Ph.D thesis titled, "Assessment of Clean Energy Potential In India Using Multi Criteria Decision Analysis" on 2nd December, 2022, through online mode. under the guidance of Dr. NK. Mohanty, Professor.

ACHIEVEMENTS AND AWARDS BY THE STUDENTS

Alumni Association Scholarship

- Ms. Viswasree. S of II-year, EEE was nominated and has received a scholarship amount of Rs. 27,500 sponsored by the "SVCE 1985-89 Trust" alumni association.



- Mano chandar C of II Year-EEE secured First place along with a cash prize of Rs.3000 in a quiz event QUIZADRY conducted at INVENTE'22, A National level Technical Fest organized by SSN College of Engineering, Chennai on 3 and 4 November 2022.



Hackathon

- Mr. Irfan Abdulla and Mr. Ashiq Mohamed Illahi, both of IV-year EEE secured the First position with a cash prize of Rs. 25000 in I Cube Hackathon (Interdisciplinary team) - conducted by students' council in association with SVCE Science Club - A national level intercollegiate technical event, Sriperumbudur on 18th November, 2022. They were mentored by Dr. C. Gopinath, Associate Professor and Mr. D. S. Purushothaman, Assistant Professor, EEE.



Best Male RYLarian

- Dhanush Ragav P, III-year EEE, participated in a Leadership Program organized by the District Rotaract Council, Chennai from 07th to 9th Oct 2022 and won the Rotary Youth Leadership Award 2022-23 and received a trophy for the ‘Best Male RYLarian’ award for the excellent Leadership Qualities exhibited by him.



- Mr. Srinivasan Vijayaraghavan of II-year EEE, won first place in the ATHENS OF THE EAST, 2nd international Grand Master Open Chess Tournament 2022-Category B and has bagged a prize amount of Rs. 60,000.

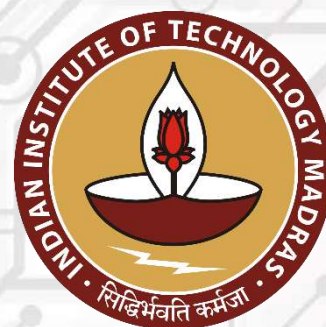


IIT-M Advanced Certification Program

Motivated by the expert talk given by IIT Madras Director, V. KAMAKOTI, Alumnus of SVCE, five students from third year EEE have registered for a course titled “Hybrid and Electric Vehicle Engineering”. This course is an advanced certification program provided by ANSYS, CADFEM and IIT-M Pravarthak. It is a 6 months course (300 hours) which also include a capstone project. It is funded by the Department of Science and Technology, Government of India, under its National Mission on Interdisciplinary Cyber-Physical Systems, and hosted as a Technology Innovation Hub (TIH) by IIT Madras. The NM-ICPS is a comprehensive Mission aimed at complete convergence with all stakeholders by establishing strong linkages between academia, industry, Government, and International Organizations.

List of students registered for the course are as follows,

- Bharathwaj.P
- Deepak.H
- Karisha Ananya N
- Guhan Sanjeevi V
- Karthick Ramanan S P



Placement Report

A total of 101 students are pursuing final year B.E Electrical and Electronics Engineering in the Academic Year 2022-23. As of now, 82 students got placed including 1 intern offer in various core and software industries out of 84 students opted for Option A.


Total no of students (101)		No of the students placed			Placed Percent -age	Total no of offers including dual offer status
Option A	Other Options	Core offer	Software offer	No		
84	17	25	57	82	98 %	112

Core Offer details

A total of 25 students (30.48%) got placed in the core industries out of 82 placed students and the students got placed in the following core industries such as TAFE, HCL Core, EmbedUR, Chemfeb Alkalis Ltd, Sona Comstar and Switching Batteries. A student RISHI KUMAR D got placed in EmbedUR with 8 LPA and the average CTC for all the core industries is about 6 LPA.

		
No of offers: 3	No of offers: 1	No of offers: 17
		
No of offers: 2	No of offers: 1	No of offers: 1

A total of 57 students got placed in the software industries out of 82 placed students. The students DEEBIKA J B, PARTHASARATHY S, SWAETA L, VIJAY ANANDHAN T and YUVAKISHORE K got placed in Eurofins with 15 LPA.

			
No of offers: 4	No of offers: 5	No of offers: 4	No of offers: 5
			
No of offers: 3	No of offers: 15	No of offers: 3	No of offers: 5
			
No of offers: 1	No of offers: 1	No of offers: 1	No of offers: 5

			
No of offers: 2	No of offers: 5	No of offers: 2	No of offers: 1
			
No of offers: 2	No of offers: 8	No of offers: 14	No of offers: 1

Paid Internship Offers

Students of final year EEE (2019-23) batch, Monish Kumar GS, Vignesh P, Kamalesh P, Diwakar KS were offered paid internships at Zoho Corporation Private Limited

Sports Achievements

Harini N of III year, EEE secured third position in the Anna University zone-II Badminton (Women) tournament held at Rajalakshmi Engineering College on 08th November, 2022.



Mohana Vishwam R of IV year, EEE, bagged third position in the Anna University Table Tennis (Men) Inter zone tournament held at KLN College of Engineering, Madurai on 23rd November, 2022.



Vasanth A of I year, EEE, secured 3rd place in zonal level ball badminton meet in Anna University conducted on 26th December, 2022.



Mr. RAGHUL R of third year represented Anna University in the All India; South zone Inter University Tournament, Hockey Championship at Bengaluru city University from 11th to 16th December, 2022.

Faculty Participation in FDPs/ Workshops

- ☞ **Ms. Anitha S, Assistant Professor**, completed an 8-week NPTEL course on Embedded System Design with ARM from IIT-Delhi, from July to Sept 2022.
- ☞ **Ms. Anitha S, Assistant Professor**, attended a workshop on GIAN workshop on Programmable Controllers with Machine learning conducted by the dept. of CSE at NIT-Trichy from 25th to 29th July, 2022.
- ☞ **Ms. Anitha S, Assistant Professor**, attended a workshop on Designing and Modelling of IoT, AI & ML Systems conducted by AICTE, Arm Education, STMicro electronics from - August, 2022.
- ☞ **Dr. Venkatesh RJ, Assistant Professor**, attended a four-week online MooC course on “Inclusive Teaching and Learning” conducted by Commonwealth of Learning (COL), Canada from 5th to 30th September, 2022.
- ☞ **Dr. Sankar M, Assistant Professor**, attended a Matlab workshop on Simulink Onramp conducted by Mathworks Training Services from 27th to 29th September, 2022.
- ☞ **Dr. Gopinath C, Associate Professor, Dr. Sethuraman S S, Dr. Kumaravel S and Dr. Shanmugavadivu N, Assistant Professors**, attended a 4-days FDP on Renewable Energy Systems Laboratory at SSN college, Kalavakkam from 26th to 29th September, 2022.
- ☞ **Dr. Sankar M, Assistant Professor**, attended a Matlab workshop on Machine Learning with MATLAB conducted by Mathworks Training Services on 10th August, 2022.
- ☞ **Dr. Sankar M, Assistant Professor**, attended a Matlab workshop on Deep Learning with MATLAB conducted by Mathworks Training Services from 11th – 12th, August, 2022.

- ☞ All the faculty members of the EEE department attended a Curriculum Design Workshop conducted by SVCE on 18th October, 2022.

- ☞ **Dr. Venkatesan CV, Assistant Professor, and Ms. Sinthamani S, Assistant Professor**, participated in the training workshop on teaching Tamil language syllabus from November 7-11, 2022. Our college management has approved the teaching of the Tamil language syllabus in the first two semesters pertaining to R2022 for engineering students for the academic year 2022-2023.

- ☞ **Dr. KR.Santha, Prof. & Head, Dr. Sudhakar K Bharatan, Prof, Dr. NK. Mohanty, Prof, Dr. R. Karthikeyan, Dr. S G Bharathidasan, Associate Professors** participated in a Two-day National Level Seminar on NAAC - Revised Assessment and Accreditation Framework on November 24th & 25th, 2022 at Dr. A.C. Muthiah Central Library Seminar Hall. More than 20 faculty members from different institutions participated in the seminar followed by campus tour to DST –FIST sponsored Inter-disciplinary Nano Research Center (INRC) addressed by Dr. Sudhakar K Bharatan, Coordinator/INRC.

- ☞ **Dr. SG Bharathidasan, Associate Professor, Dr. S Kumaravel, Assistant Professor, and Ms. S Arulmozhi, Assistant Professor**, attended MathWorks Training workshop on “Modeling and Control of Electric Vehicles using Simulink and Simscape” from 23rd-25th November, 2022, conducted by Mathworks Inc.

- ☞ **Dr. S Kumaravel, Assistant Professor, and Ms. S Arulmozhi, Assistant Professor**, attended a PALS-VLAB Initiative Faculty Development Program organized by PALS, along with NITK scheduled for three half-days, from 9,1 November 2022, in Virtual mode. The FDP focused on training the faculty on General and Discipline specific Virtual Labs

- ☞ **Dr. R.J. Venkatesh, Assistant Professor**, attended 5 days UHV FDPs (ONLINE) to prepare Faculty Mentors for Student Induction Program (SIP) from 14th – 18th November, 2022

- 📖 IQAC-SVCE has conferred a certificate of excellence to **Dr. NK. Mohanty, Prof** and **Dr. R. Karthikeyan, Associate Professor**, in recognition of their lasting contribution to Internal Quality Assurance Cell on 25th November 2022.
- 📖 **Mr. D S Purushothaman, Assistant Professor**, attended the Faculty Development Training Program on “Internet of Things (IoT) and Cloud Interface” from 21st-23rd November, 2022.
- 📖 **Mr. S. Bharadwaj, Assistant Professor**, attended a five days online workshop on "Renewable Energy and Plug in Vehicle Integration in Micro-Grid" organized by O P Jindal University, Raigarh, Chhattisgarh from 14th - 18th -Nov, 2022.
- 📖 **Ms. Anitha S, Assistant Professor**, participated in the faculty development program on “Creative methods and tools for effective research dissemination”, IITDM, Kancheepuram, December 10th -12th , 2022.
- 📖 **Ms. Anitha S, Assistant Professor**, attended a workshop on Creative methods and tools for effective research dissemination conducted by IITDM, Kancheepuram, ^t from 10th - 16th December, 2022.
- 📖 **Dr.C.Kamal, Assistant Professor**, participated in a Two week ATAL FDP on " Electric Vehicle-Research Challenges and Opportunities" at MIT Campus Anna University, Chennai December 05th to 16th December, 2022
- 📖 **Mrs. Suganthi K, Assistant Professor, & Mr. Bharadwaj S, Assistant Professor**, participated in a faculty development program on “PLC and Automation” at Sri Venkateswara College of Engineering, December 27th -28th , 2022.
- 📖 **Mrs. Akila, Assistant Professor**, participated in a faculty development program on “Disaster Awareness Programme” at Sri Venkateswara College of Engineering 17 December, 2022.
- 📖 **Mr. Karthikeyan V, Assistant Professor**, participated in a faculty development

program on “Electrical Vehicle Technologies-A Future Transportation Tool” at Bangalore Institute of Technology from 28th November to 2nd December, 2022.

- ☞ **Mr. Karthikeyan V Assistant Professor** participated in a faculty development program on Hybrid Electrical Vehicle Technology-Basics at Toyota Kirloskar Motor Pvt. Ltd. on December 8th, 2022.

EVENTS CONDUCTED BY PROFESSIONAL SOCIETIES

◆ AEEE EVENTS

❖ Guest Lecture on “Artificial Intelligence And Data Analytics For Electrical Engineers”

The Valedictory function of Association of Electrical and Electronic Engineers was held on 25th August, 2022. Mrs. Mythily Rajavelu, Vice President, Sr. Tech Manager, Bank of America was the guest speaker. She delivered a guest lecture on "Artificial Intelligence and Data Analytics for Electrical Engineers". Dr. KR. Santha, Vice Principal and Head addressed the students on the functioning of the association and recent advancements in the electrical engineering domain. This was followed by introduction of the guest speaker by Dr. M. Sankar, coordinator of AEEE.

The guest speaker, Mrs. Mythily Rajavelu, spoke about the basics of Artificial intelligence and data analytics. She elaborated further by quoting examples from the field. The entire working and advantages of data analytics and AI was clear. explained with an example of rising substation at a certain location. Students were asked to site a few cases where they wish to apply AI and data analytics. After the guest lecture, the valedictory function was concluded with the vote of thanks.



❖ Inauguration of AEEE (AY 2022-23)

The inauguration of Association of Electrical and Electronics Engineers (AEEE) for the AY 2022-2023 was held on 19th Sep 2022. The event was organized in Function Hall, SVCE from 10.45 AM to 12.05 AM. A total of 160 students (III, V & VII semester) and faculty members attended the event. The event started with a prayer song followed by a Welcome address by Ms.Keerthana of 3 year EEE. Dr.Sudhakar K Bharatan, Professor and AHOD delivered the introductory speech and detailed the association activities and active participation of students in organizing various technical events.

Dr.M.Sankar ASSISTANT PROFESSOR presented the annual report of AEEE for the AY 2021-2022. He thanked the support rendered by AEEE office bearers and briefed on the activities to be organized in the upcoming AY 2022-2023. Mr.Augustin of 3 year EEE introduced the chief guest Mrs.Kamatchi Nadan, Founder and Managing Director, SEN Electrical Design Systems, Chennai. She gave a brief introduction about her company. After which she detailed electrical power, its types, and the need of its significance in electrical system design. She emphasized more on the importance of the electrical stream and encouraged the students to opt for jobs in the core. She concluded her lecture by answering queries raised by the students.



❖ Guest Lecture on “Battery Storage Systems”

The Department of Electrical and Electronics Engineering organized a guest lecture on “BESS - Battery Energy Storage systems (Grid-scale)” on 20th October, 2022 at Function Hall, SVCE. Aravind Takshan of 2 year EEE presented the welcome address.

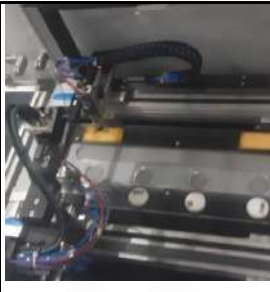



The chief guest was introduced by Dr. Sudhakar K Bharathan, Professor; AHOD.

The guest speaker, Mr. R. Annamalai presented his guest lecture by explaining the various renewable resources like solar, wind, etc., their intermittent nature, challenges in integrating it to the power grid and the need for grid-scale energy storage technologies to optimize extraction of renewable energy. He briefed on the various grid-scale battery energy storage technologies feasible and presently used in Power Grid Corporation.



❖ **Exhibition on Wheels - Expotainer**

The Department of Electrical and Electronics Engineering in association with M/S Festo India Pvt. Ltd. organized an Exhibition on Wheel - "The Expotainer" on 10 October 2022. The Festo Expotainer is a custom built fully equipped, air-conditioned exhibition vehicle built on Volvo Chassis having a wide range of static and dynamic displays of latest products. The working of various industrial products was explained to the students by experts.

			
Automatic Stamping machine	Pneumatic Cylinders	Automatic CD Loader	Chair Strength Checker

	
Exhibition vehicle	Discussion

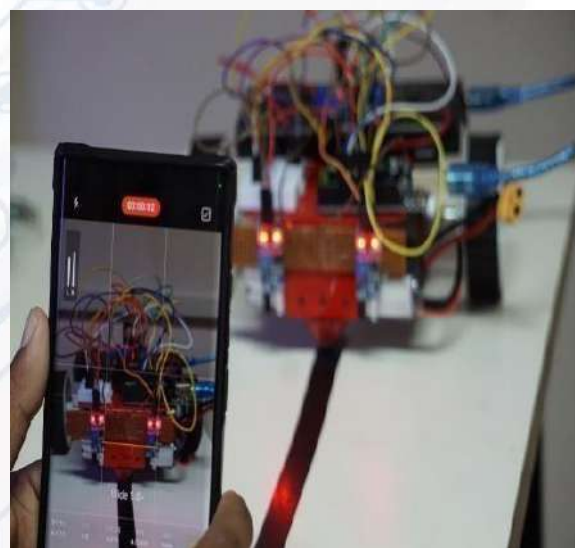
Value Added Course (Session-2)

- The Department offers a 'two credits Value Added Course (Session-2) "VDI8603- Modeling and Simulation of Electrical Systems" during 2nd – 15th November, 2022 in physical mode. This course is exclusively for present II-year (2020 admitted batch) students to enable them to expertise in Modeling of electrical systems.



ROBO FEST 2.0

- ☞ The IEEE SVCE student branch conducted a one-day technical event titled “ROBOFEST 2.0”, on the 16th of November 2022. The event saw more than 35 people registering from across various departments and years of study.
- ☞ The inauguration was presided over by Dr. K.R.Santha, HoD who is also the IEEE Student Branch Chairperson. She addressed the gathering about the importance of technical events and how it can help develop one’s profile.
- ☞ After the successful completion of all the events, the winners were awarded with cash prizes worth Rs. 9000. The prizes were awarded to the winners by Dr. K. R. Santha, bringing the technical extravaganza to a memorable end.





Motivational Lecture

- The Women Empowerment Cell of SVCE organized a motivational lecture on "Self-Grooming, Practicing Self-Confidence and Work- Life Balance" for the girl students on 17th November 2022 at SVCE- Function Hall. The event was presided over by Dr. KR.Santha, Vice- Principal, HoD of Electrical and Electronics Engineering department and the WEC Chairperson. She addressed the gathering about the need for self-confidence and level of grooming in our working environment.
- Ms. Sujaya Rao was invited as a guest to address the girl students. She interacted with the participants and provoked the student's thoughts on the importance of grooming within their safe limits. She discussed a few case studies in her work career and in the surroundings.



Voluntary Blood Donation Camp

☞ The Youth Red Cross, Rotaract Club, NSS, NCC and RRC together organized a one-day Voluntary Blood Donation Camp on 17 November, 2022 (9:00 am - 3:00 pm) at Class Room Block -I, SVCE. Around 20 students from the EEE department took part in the event as donors and volunteers.





NAAC Team Visit

The National Assessment And Accreditation Council (NAAC) conducts assessment and accreditation of Higher Educational Institutions (HEI) such as colleges, universities or other recognized institutions to derive an understanding of the 'Quality Status' of the institution.

The NAAC expert team performed a two-day visit to SVCE on 29th and 30th September, 2022. The team was welcomed with a bouquet and shawl by the Principal, Secretary and Treasurer. After a brief presentation by the principal, they visited the various departments of the college followed by visits to laboratories and incubation centers. After lunch, they visited the Library, Sports center, Hostel, Medical center and Canteen. Later on, arrangements were made for the team to interact with students, alumni and parents. Then a meeting with IQAC coordinators, administrative officers, and Finance officers was held. The day's visit concluded with a students' cultural event organized at the multi-purpose hall.

The second day of visit started with inspection of the physical facilities like security, counseling, skill development center, energy conservation, etc. After that, the team discussed the outstanding issues and finalized the NAAC team report. After a few days, the accreditation results were declared. SVCE was Accredited with a CGPA of 3.35 on a four-point scale at A+ Grade valid for a period of 5 years from 11th October, 2022



NAAC peer team visit NRC

Parents Day Meet – I (Seniors)

Parents' Day meet for senior students for the ODD semester of academic year (2022-2023) was held on 5th November, 2022, Saturday. The reception desk was managed by Mrs. Akila and Mr. Balakrishnan.

Faculty advisors carried out vigorous counseling as instructed by HoD. After meeting with subject teachers, the parents were directed for HoD's address. Dr. KR. Santha, HoD addressed the gathering and discussed elaborately about the autonomous stream and importance of regular class attendance, Laboratory class attendance, CAT exams, Special classes and Career planning. Parents clarified their doubts through interaction with HoD and parents have been invited to meet her in person for any specific discussion.

Suggestions given by the parents were counseling for higher studies and a greater number of class tests for better retention and more Industry visits.

The moments captured during the parent day meet are depicted below



Industrial Visit

Students of final year, EEE, went on an industrial visit to Pantech Switchgear Private Limited, Irungattukottai, Kanchipuram on 18th November, 2022. A total of 80 students visited the company. They were accompanied by Dr. C. Gopinath, Mr. S. Bharadwaj, Mr. E. Naveen Kumar and Mr. V. Karthikeyan. The aim of the visit was to educate the students about the working of various industrial equipment. They learnt about the different fuses used in industries for transformers and motors. They also watched the working of off-load and on-load circuit breakers in real-time.



DID YOU KNOW???????

Low voltage outdoor lighting is better than line voltage?

Yes. Low voltage outdoor lighting delivers more energy efficiency than line voltage because it utilizes a transformer to step down the power consumption. Instead of 120v, low voltage uses 12-24v of power lighting. Bulbs and fixtures are cheaper to purchase; and since you are dealing with lower power. When it comes to outdoor lighting, you can only use as many fixtures as equal the total wattage offered by your transformer. So, there are limitations even with low voltage outdoor lighting. The danger of shock is also reduced significantly.

Unfortunately, these bulbs don't last very long and have to be replaced frequently.

Applications of low Voltage systems:

- _ Smart*
- _ DoorbellsSmart*
- _ Phones*
- _ Thermostats for heating and cooling systems*
- _ Garage Door Opener*

Fun Fact

Although low-volt wiring may be added to an existing home, doing so will cost more than doing so during new construction or renovation since the electrician will need to climb through attics and cut or fix drywall where necessary.

What is Line voltage?

Line voltage denotes that it is operating at 120 volts, which is the line voltage of the house without a transformer. In Technical aspects, the voltage of a power transmission circuit or distribution circuit up to the point of transformation or utilization.



What is low voltage?

Low voltage lighting systems use transformer to reduce normal line voltage (120 or 277 volts, usually) to 12 or 24 volt

