JAN'24- MAR'24

NEWSLETTER

SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY SURAT

DEPARTMENT OF ELECTRICAL ENGINEERING

AL ENGINEERING DEPAIRMENT

The Department of Electrical Engineering is one of the oldest departments at Sardar Vallabhbhai National Institute of Technology. The department actively conducts various academic and research activities throughout the year. This newsletter presents a brief about various activities from January 2024 to March 2024.



HIGHLIGHTS

- Research Publications
 - Journals -25
 - Conferences 04
- Consultancy Work 03
- Expert Talk- 04

Department Vision

To be the leading department disseminating globally acceptable education, effective industrial consultancy and relevant research output.

Department Mission

To be a global centre of excellence in technical education and innovation producing competent professionals with integrity.

Programme Educational Objectives

- Graduates will be able to solve engineering / industrial problems by employing various learning resources and modern tools.
- Graduates will be able to design products to meet social, economic and environmental demand by innovative ideas.
- Graduates will be able to investigate complex problems and take up research and development work in the allied fields.
- Graduates will be able to communicate effectively through oral and written presentation of technical reports, adopting lifelong learning with integrity and ethics; and they will have interpersonal skills required to lead and nurture diverse teams.



DR. PRANAV B. DARJI Head, DoEE SVNIT, Surat

Welcome to the Department of Electrical Engineering at SVNIT, Surat. The Department has 24 well-qualified faculty members actively involved in academics, administrative duties, research, and consultancy. The broad research areas are Power Electronics, Electrical Drives, Power Systems, Control and Instrumentation. The faculty published several research papers indexed in SCIE, SCI, ESCI, Web of Science, Scopus, etc. Also, the worth of present ongoing and completed projects is more than two crores.

The Department of Electrical Engineering offers B. Tech and M. Tech programmes. The M. Tech specialisations are Power Electronics and Electric Drives, Power Systems and Instrumentation and Control. The Department of Electrical Engineering has many PhD scholars, and a significant amount of research is ongoing.

I am happy to present the 14th issue of the Department's quarterly newsletter. The present issue includes new administrative duties, STTPs/Workshops, student placement details, Research publications and projects, and faculty and student achievements.

I acknowledge the efforts of the committee members Dr. J. Venkataramanaiah, Dr. G. Sushnigdha and Dr. Suresh Lakhimsetty in editing this issue. I also thank Mr. Mayank Bhagat for assisting the committee members.



INSTITUTE/DEPARTMENT LEVEL FACULTY NEW ROLES/RESPONSIBILITIES



DR. PRANAV B. DARJI, PROFESSOR

HAS TAKEN OVER CHARGE OF HEAD OF DOEE FROM 01/01/2024 FOR TWO YEARS.



DR. MAHESH AEIDAPU, ASSISTANT PROFESSOR

HAS TAKEN OVER CHARGE OF FACULTY IN CHARGEOFELECTRICALANDCOMMUNICATIONSMAINTENANCE FROM 10/02/2024 FOR TWO YEARS.

JOURN

Journals

- Medewar, Prashant G., Sharma, Shambhu N. and Patel, Hirenkumar G.. "Carleman framework filtering of nonlinear noisy phase-locked loop system" International Journal of Nonlinear Sciences and Numerical Simulation, vol. 24, no. 8, 2023, pp. 3165-3176.
- Athul Vijay P.K., Varsha A. Shah, "Realization of ultracapacitor as sole energy storage device in induction motor drive electric vehicle with modified state timing based field weakening control algorithm, Journal of Energy Storage, Volume 81, 2024
- K. Bharath Kumar and Kunisetti V. Praveen Kumar, "A Reduced Voltage Vector Strategy-based PTC of OEW-PMSM Drives", Accepted for Publication in IEEE Transactions on Industrial Electronics.
- Rekha Chandola, & Ashish K Panchal. (2024). A standalone photovoltaic energy storage application with positive pulse current battery charging. Journal of Energy Storage, 85, 111184.
- Dhanashri Changan, Pranav B Darji "ANFIS Based Hybrid Anti Islanding Protection scheme for Distribution Generators" in Majlesi Journal of Electrical Engineering, 2024.
- Dhanashri Changan, Pranav B Darji "An Enhanced Asymmetrical Multilevel Inverter (MLI) with Reduced Switch Count Utilizing A DC Source" in Majlesi Journal of Electrical Engineering, 2024.

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JOURNA

Journals

- Mahajan, V., & Yadav, A. K. (2024). Transmission line switching spread modelling of synchrophasor smart grid network with load uncertainty inspired by epidemic model: a study of reliability and vulnerability. Sustainable and Resilient Infrastructure, 1–19.
- Arya, S.R., Mistry, K.D. & Kumar, P. DVR Using Randomized Self-Structuring Fuzzy and Recurrent Probabilistic Fuzzy Neural-Based Controller. J. Inst. Eng. India Ser. B (2024).
- Singh, Kamna, Khyati D Mistry, and Hiren G Patel. "Regression Learner Machine Learning Approach to Predict Wind Speed Considering Various Parameters and Integration of DG in Mesh Distribution System through GWO." Australian Journal of Electrical and Electronics Engineering 21, no. 1 (2024).
- Tiwari, N., Yadav, S., & **Arya, S. R**. (2024). Artificial intelligence and PI gain optimisation for sensorless indirect vector control of induction motor-based electric vehicle drives. **International Journal of Ambient Energy**, 45(1).
- Deshpande, C.V., Chilipi, R. & Arya, S.R. Modified fractional least mean squarebased control scheme for dynamic voltage restorer to improve power quality. Electr Eng (2024).
- Deshpande, C., **Chilipi, R. & Arya, S.R**. A multi-convex composition of adaptive LMS filter-based control for dynamic voltage restorer with SSO-optimized PI gains. **Electr Eng** (2024).

JOURN

Journals

- Arya, S. R., Maurya, R. and Srikakolapu, J. (2024) 'DSTATCOM using model predictive control associated with LMS control', International Journal of Electronics, 111(2), pp. 238–258.
- Karri V.V. Satyanarayana, Rakesh Maurya, Unified control of high gain DC-DC converter for PV-battery hybrid system in a standalone and DC-microgrid applications, Journal of Energy Storage, Volume 88, 2024.
- Srivastava, K., Maurya, R. & Kumar, S. A STC-DAB converter for PV-EV battery-based hybrid system with a unified power management scheme in a grid-integrated and islanded condition. Electr Eng (2024).
- Pratap, A., Tiwari, P., & Maurya, R. (2024). Optimal allocation of controllable power factor distributed generation with network reconfiguration on electric vehicle charging station loaded distribution network. International Journal of Ambient Energy, 45(1).
- Karri V.V. Satyanarayana and Rakesh Maurya Single switch high voltage gain DC-DC converter for renewable energy applications, International Journal of Power Electronics 2024, 19:1, 1-23.
- Kumari Shipra, Rakesh Maurya, Brayton-Moser passivity-based controller for an onboard integrated electric vehicle battery charger, Journal of Energy Storage, Volume 75, 2024.
- Pratap Arvind, Tiwari Prabhakar, Maurya Rakesh, Singh Bindeshwar, Cheetah optimization algorithm for simultaneous optimal network reconfiguration and allocation of DG and DSTATCOM with electric vehicle charging station, Serbian Journal of Electrical Engineering, Vol 2, Iss. 1, 2024

JOURN

Journals

- Sharma A, Chilipi R, Praveen Kumar KV. Arm-current sensorless model predictive control for grid-interfacing modular multilevel converter with reduced switching frequency. Int J Circ Theor Appl. 2024; 1-18.
- Kumar KB, Praveen Kumar KV. An enhanced predictive current control technique for interior permanent magnet synchronous motor drives with extended voltage space vectors for electric vehicles. Int J Circ Theor Appl. 2024; 1-20.
- Astha Bharat Patel, Rajasekharareddy Chilipi, Development of constant switching frequency model predictive control for DFIG-based wind energy conversion system in standalone and grid connected operation, Sustainable Energy Technologies and Assessments, Volume 64, 2024
- Kumbhare, P., **Tolani, S.** & Halder, S. Improved 2 power decoupling in single-phase differential buck inverter for renewable energy applications. **Electr Eng** (2024).
- Deepak Mishra, Gangireddy Sushnigdha, A novel re-entry trajectory design strategy enforcing inequality and terminal constraints in height-velocity plane, Advances in Space Research, Volume 73, Issue 5, 2024, Pages 2515-2531.
- Deepak Mishra, Gangireddy Sushnigdha, Neural network-based hardware-in-theloop implementation of fourier series parametrized control profiles for re-entry vehicles, Advances in Space Research, Volume 73, Issue 9, 2024, Pages 4782-4799.

CONFERENCES

 Kuldeep Vadhel, Jahera Shaik, Rupanshu Gupta, Kaushal Garg, Mridul Tiwari, Chudamani R, Chandani Gor, "Implementation of Space Vector Switching Technique using a Simplified Approach for a Five Leg Voltage Source Inverter", 2023 IEEE International Conference on Power Electronics, Smart Grid, and Renewable Energy (PESCRE), 17-20, December, 2023, Trivandrum, India.

Line

- Kamna Singh, Khyati D. Mistry ,Hiren G.Patel, "Optimizing Distribution Generation and EV Charging Station Placement with Particle Swarm Optimization under Variable Load Condition" 3rd International Conference on Power Electronics & IoT Application in Renewable Energy and its Control, February 23-24, 2024.
- L. Sravya and S. Lakhimsetty, "Voltage Vector-based Predictive Current Control Strategy for Three-Level Open-Winding Induction Motor Drive," 2023 IEEE 3rd International Conference on Smart Technologies for Power, Energy and Control (STPEC), Bhubaneswar, India, 2023, pp. 1-5, doi: 10.1109/STPEC59253.2023.10430910.
- K. Srivastava, D. Firake, R. Maurya and S. Kumar, "Analysis, Design, and Control of the Dual Active Bridge Converter for EV Battery Charging," 2024 Third International Conference on Power, Control and Computing Technologies (ICPC2T), Raipur, India, 2024, pp. 235-240









CONSULTANCY WORK

- Consultancy work: Mathematical modelling of scheme D (Mathematical model and closed loop control of MMC and DC-DC converter)
- Consultant: Virbhu India Pvt. Itd.
- Consultant Amount: Rs. 15.93 Lakhs
- Principle Faculty Member: Dr. Pranav B. Darji
- Associate Faculty members: Dr. M. A. Mulla, Dr. K.
 V. Praveen Kumar, Dr. J. Venkataramanaiah.









CONSULTANCY WORK

- Consultancy work: Review and vetting of Drawings and Design calculation of Electrification, Lighting Protection system and water supply.
- Consultant: Integral Solutions
- Consultant Amount: Rs. 59,000/-
- Principal Faculty member: Dr. H. G. Patel
- Associate Faculty member: Dr. Vimal Patel









CONSULTANCY WORK

- Consultancy work: TSETC of VT pump sets & related mechanical-electrical equipment, etc., under the augmentation work of Mota Varachha Intakewell of SMC.
- **Consultant**: Surat Municipal Corportation
- Consultant Amount: Rs. 2,04,100/-
- Principal Faculty member: Dr. Aeidapu Mahesh
- Associate Faculty members: 1) Dr. Manish Rathod, DoME, 2) Dr. Suresh Lakhimsetty, DoEE





STAFF ACHIEVEMENTS

• Mr. Karan Parmar (Technician, Department of Electrical Engineering) secured 3rd position at English-Hindi Translation competition organized by Hindi Cell, SVNIT Surat.





FAREWELL FUNCTION

Farewell function to Dr. Sukanta halder on 28-02-2024. Congratulations to him for joining IIT Dhanbad as an Assistant Professor in March 2024.







EXPERT TALKS BY FACULTY



- Dr. H. G. Patel delivered an expert talk on "Stability Analysis using MATLAB" in a workshop entitled MATLAB and its Applications in Engineering and Research (MATER 2022) organised by DoChE, SVNIT, Surat on 09/01/2024.
- Dr. Mahesh Aeidapu delivered a guest lecture on "Battery SOC estimation using deep learning" in the STTP on Modern Optimizations Techniques in Engineering Research, organized by Gayatri Vidya Parishad College of Engineering(A), Visakhapatnam, on 1st Feb 2024.
- Dr. Suresh Lakhimsetty delivered a guest lecture on "Induction Motor Drive for EVs" in STTP on Electric Vehicle Technology & Its Advances, organised by the Electrical Engineering Department & Automobile Engineering Department, Dr. S. S. Ghandhy College of Engineering & Technology, Surat, Gujarat, on 21/02/24.
- Dr. Suresh Lakhimsetty delivered a guest lecture on "An Introduction to Electric Vehicles: Open-End Winding Topology & Torque Control Strategies" in A Collaborative One-Week Online Faculty Development Program (Joint-FDP) on "AI Applications to Electric Vehicles", organised by the Department of Electrical & Electronics Engineering, GMR Institute of Technology, Rajam, Vizianagaram, Andhra Pradesh & Department of Electrical & Electronics Engineering V R Siddhartha Engineering College, Vijayawada, Andhra Pradesh, on 06/03/24.

PH.D. AWARDEE

DS15EL002 01/01/24

RASHMI K. PATEL

"STABILITY ENHANCEMENT AND EFFICIENCY IMPROVEMENT OF A MULTI-CONVERTER SYSTEM USING MULTI-OBJECTIVE OPTIMIZATION"

SUPERVISOR - DR. R.CHUDAMANI

DS19EL001 21/03/24

ATUL KUMAR YADAV

"RELIABILITY ASSESSMENT AND CYBER INTRUSION MONITORING OF SYNCHROPHASOR BASED POWER SYSTEM NETWORK"

SUPERVISOR - DR. VASUNDHARA MAHAJAN

DS16EL003 28/03/24

ROHIT CHIRAG VASANTBHAI

"SUB-SYNCHRONOUS RESONANCE DAMPENING ENHANCEMENT IN DFIG-BASED WIND-FARM INTERFACED WITH SERIES-COMPENSATED NETWORK"

SUPERVISOR - DR. P.B.DARJI

DR.H.R.JARIWALA



 Abhishek Mehta, a 3rd-year Electrical Engineering student, participated in the Tata Imagination challenge'23. He secured a spot in the finale amongst 2.7 lakh participants and was also amongst the top 5 popular choice awards for the idea "AI Integrated Traffic Management System-TrafficIQ". His idea gained great popularity among the Tata senior leaders and the other participants from top B-Schools.









- Four participants, Riya Gupta, Dev Desai, Disha Lad, and Harshal Patel, participated in the VLSID INTERNATIONAL CONFERENCE Design Contest held in Kolkata and secured 4th rank across India.
- The project selected was "Automatic Modulation Classification using LWAMCNet on STM32".
- There were CEOs, CFOs and directors of various companies like AMD, Synopsis, Ansys, Mathworks, and Marvell as Professors and scientists from prestigious universities like Purdue University and Stanford University who have academic excellence.
- The conference was a 5-day event from 6 January 2024 to 10 January 2024. It is the biggest VLSI Conference in the world, and the theme for this year was "AI at the Edge".



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- A group of 10 members (students of DoEE, DoME etc.) from Team Phoenix Aero at SVNIT Surat participated in the Autonomous Drone Development Competition (ADDC) held at KCG College of Engineering by SAEISS. The competition required the construction of a drone, adhering to specific constraints, capable of delicately delivering a medical parcel. The team independently designed the entire drone and utilized 3D printing for precise construction and added durability.
- Their crowning achievement was securing the first position in the technical presentation segment, a testament to their unwavering dedication, collaborative spirit, and technical prowess.
- Team Members: Aryan Tembhekar, Aryan Pal, Neel Mistry, Ratnadeep Patra, Lalit Agarwal, Chirag Tripathi, Megh Heruwala, Dhruvank Shah, Aseem Sugandhi, Chinmay Harkawat



 Ganesh Ranjan Yadav, DoEE 3rd Year student, Participated in All INDIA Inter NIT Athlete 2K24 games held at NIT Warangal in Javelin Throw sports and secured 4th position among 22 NIT players.





Electrical Intra Department Cricket Tournament - 2024



Winner Team



Runner-up Team







PLACEMENT DETAILS

Roll No	Student Name	Company	СТС
U20EE054	Patel Kunjan	Texas Instruments	36.42
U20EE022	Bhumi Vavadiya	Texas Instruments	36.42
U20EE072	Ayush Daga	Wellsfargo	24
U20EE090	Om Tamboli	ЈРМС	19.75
U20EE053	Kaushal Makwana	ЈРМС	19.75
U20EE046	Ketul Sathawara	ЈРМС	16
U20EE024	Nunna Pragna Sri Kali	Jindal shadeed	16
U20EE092	ABHISHEK PRATAP	Jindal shadeed	16
U20EE109	Vats Agarwal	Axxela	14.1
U20EE039	PRIYANSHU SHIVHARE	Axxela	14.1
U20EE097	Shubham Singh	Aspect ratio	14
U20EE101	M Umar Karimi	Mastercard	13.4
U20EE079	Harsh Kumar	Micron	13.17
U20EE068	Patel Smit	Micron	13.17
U20EE106	Yettapu Manaswi	John Deere	12.63
U20EE066	Kriti Jain	John Deere	12.63
U20EE113	Shikha Kumari Bharti	John Deere	12.63
U20EE112	Dhruvi Talsaniya	John Deere	12.63
U20EE064	Keshav narayan balot	Piramal Fiannace	12.54
U20EE040	Pasupuleti Vaishnavi	Bajaj Auto	11.74
U20EE074	Vedant Arya	Bajaj Auto	11.74
U20EE042	Anmol Rai	Tredence	10







PLACEMENT DETAILS

Roll no.	Name	Company Name	LPA
P22IC003	SUPARNA CHAULYA	Micron	17.48
P22EL005	Kamran Asad	varroc Engg	12.5
P22EL015	Tithi Amdavadi	varroc Engg	12.5
P22PS004	Maxwell Paul Mendonca	Enerzinx	12.1
P22EL001	SUJEET KUMAR	Hitachi Energy	9
P22EL002	ANAND KUMAR	Tata Elxsi	8
P22EL011	NIYANTA JAGDISHBHAI CHAVDA	Tata Elxsi	8
P22EL012	BHAUTIK DUDHAT	Fuji Electric	8
P22EL008	AKSHAT KUMAR	Fuji Electric	8
P22PS006	Sipra Kundu	Tata Elxsi	8
P22PS005	Deep Mukeshchandra Gohil	Tata Elxsi	8







PLACEMENT DETAILS



TEAM



GANGIREDDY SUSHNIGDHA ASSISTANT PROFESSOR DOEE, SVNIT SURAT



J.VENKATARAMANAIAH ASSISTANT PROFESSOR DOEE, SVNIT SURAT



SURESH LAKHIMSETTY ASSISTANT PROFESSOR DOEE, SVNIT SURAT



MAYANK BHAGAT SENIOR TECHNICIAN DOEE, SVNIT SURAT