

DEPARTMENTAL ACTIVITY REPORT

Department: Electrical & Electronics Engineering

Activity Category: Faculty Development Program

Title of the Activity: FDP on Emerging Computational and Energy Technologies

Theme/Focus Area:

1. Basic Details

- **Date of Activity:** July 20-25, 2026
- **Day:** One Week
- **Time:** 10 am to 4 pm
- **Venue/Platform:** Lab Room No. 631/ Seminar Room
- **Organized by:** EEE Department
- **Activity Coordinator(s):** Dr. Sunil Kumar Pandey
- **Number of Participants:**
 - Faculty: 42
 - External Participants (if any): 05

2. Resource Persons / Speaker Details (if applicable)

- **Name:** Prof (Dr) Rajneesh Sharma
- **Designation:** HOD, ICE
- **Organization:** NSUT, Delhi
- **Area of Expertise:** Soft Computing
- **Brief Profile:**

Dr. Rajneesh Sharma did his B.E. in Electrical Engineering from Delhi College of Engineering, Delhi University and M.E. in Control and Instrumentation from Delhi College of Engineering, Delhi University. He did his Ph.D. in Intelligent Control of Non Linear Systems from Indian Institute of Technology, Delhi. Thereafter Dr. Sharma carried out Post Doctoral Research at Institute for Systems and Robotics, IST, Lisbon, Portugal for one year. Dr. Sharma has worked in BHEL, Department of Telecommunications and Indian Railways as IES officer prior to joining NSIT in 2001. He has published about 80 research papers in reputed referred journals and conferences. He has published 3 patents and guided 5 Ph.D. and 25 M. Tech students. His research interests include POMDPs, Dec POMDPs, Cooperative Multi agent Systems, Markov game based Control, Neural Networks, Fuzzy Logic, Reinforcement learning and Multi Robot Systems, Machine Learning applications in Renewable Energy, Transformers, Transmission lines, Bio Medical Systems.
- **Name:** Dr. Debasish Mishra
- **Designation:** Lead R&D Engineer
- **Organization:** GE, VERNOVA
- **Area of Expertise:** Design of Power Converters
- **Brief Profile:**

Dr. Debasish Mishra is a Lead R&D Engineer in the Control and Protection Division of GE Vernova's HVDC business. With over a decade of combined academic, research, and industrial experience, he specializes in the design and control of power electronic converters for electric vehicles, grid-integrated charging stations, and advanced control applications.

Prior to joining General Electric, Dr. Mishra served as an R&D Control Engineer at Hitachi Energy India in Power Conversion business, collaborating closely with the global R&D team in Baden, Switzerland. His extensive research background includes key research associate roles in high-impact projects at IIT Delhi, such as DRIIV (Delhi Research Initiative and Innovation) and SIEVE (Smart Infrastructure for EV Ecosystems). An accomplished researcher, he has published more than 15 IEEE Transactions papers and peer-reviewed conference articles. Dr. Mishra holds a B.Tech in Electrical Engineering (First Class with Honors) from BPUT Rourkela, an M.Tech in Power Electronics from IIT (BHU) Varanasi, and a Ph.D. from IIT Delhi.

- Name: Mr. Chandrav Sourav
- Designation: CEO & Founder
- Organization: UPTECH Automation
- Area of Expertise: Industrial Automation
- Brief Profile:

Grassroot knowledge of Technologies including Industrial Automation: PLC, PAC, DCS, SCADA, HML, VFD, Industrial Communication and Networking, Microsoft Windows Applications using Python, AI-ML based Computer Vision, SQL and Python Integration, Data Science, Data Engineering, Data Analysis and Basics of Data Warehousing Dev-Ops with CI-CD Pipelines, Docker, Kubernetes, Jenkins etc.

- Name: Prof (Dr) Smriti Srivastava
- Designation: HOD, Electrical Engineering
- Organization: NSUT, Delhi
- Area of Expertise: Control & Instrumentation
- Brief Profile:

Prof. Smriti Srivastava received her B.E. degree in Electrical Engineering and M.Tech. degree in Heavy Electrical Equipment from MANIT Bhopal, India, in 1987 and 1991, respectively, and Ph.D. degree in Intelligent Control from Indian Institute of Technology (IITD) New Delhi, India, in 2005. Since August 1991, she has been with the Department of Instrumentation and Control Engineering, Netaji Subhas University of Technology (Erstwhile NSIT, University of Delhi), New Delhi, India, where she is presently working as Head EE Deptt. and Professor in the Deptt. of Instrumentation and Control Engineering, from September 2008 to till date. She has over 180 publications in International Journals and Conferences in the areas of AI, ML, Neural Networks, Fuzzy logic, Control Systems and Biometrics. Her current research interests include neural networks, fuzzy logic, and hybrid methods in modelling, identification and control of nonlinear systems and Biometrics. She is the Reviewer of IEEE Transactions on Systems, Man and Cybernetics (SMC), Part-B. IEEE Transactions on Fuzzy Systems, Journal of Applied Soft Computing, Neurocomputing, ISA Transactions (Elsevier), Journal of EAAI and Expert Systems (Wiley).

- Name: Dr. Anshul Varshney
- Designation: Scientist D
- Organization: NPL, Delhi

- Area of Expertise: Energy Efficient Electrical Machines and intelligent Motor Drive
- Brief Profile:

Dr. Anshul Varshney is a Scientist and Deputy Head of the Fluid Flow Metrology Division at CSIR–National Physical Laboratory (CSIR-NPL), New Delhi, India. He is actively engaged in research, development, and standardization activities in fluid flow metrology, thermal engineering, renewable energy systems, and precision measurement science. He obtained his Ph.D. from the Indian Institute of Technology (IIT) Delhi, where his research focused on advanced power electronics, energy-efficient electrical machines, and intelligent motor drives. Dr. Varshney has established himself as a leading researcher in the fields of flow measurement, thermal management, and sustainable energy technologies. His research interests encompass power electronics, renewable energy integration, electrical machines and drives, fluid flow metrology, measurement standards, and the development of smart and energy-efficient systems. His work has significantly contributed to advancing measurement science and engineering solutions that support industrial innovation and sustainable development. He has authored numerous research papers in reputed international journals and conference proceedings. His research contributions include advanced cooling technologies for electronics and data centers, fluid flow measurement standards, renewable energy-driven systems, smart microgrids, and energy-efficient electrical drives. He has successfully led and contributed to several national R&D projects and has played an important role in the development and dissemination of national measurement standards supporting Indian industry, testing laboratories, utilities, and government agencies. Beyond his research contributions, Dr. Varshney actively participates in academic and professional service activities. He has served as an Alumni Member of the Board of Studies in the Department of Electrical Engineering at NIT Uttarakhand and DAV University, Jalandhar, contributing to curriculum development and academic planning. He has also served as a reviewer, session chair, technical committee member, and organizer for several international conferences and journals, while mentoring students, young professionals, and early-career researchers. His contributions to research, innovation, and professional leadership have been recognized through several prestigious awards and honors. He received the Best Paper Award at SLIETCON 2019, organized by SLIET Longowal in association with NITTTR Chandigarh, for his outstanding work in instrumentation and electrical systems. He is also a recipient of the BRICS Young Scientist Fellowship (2022), the IEEE Power & Energy Society Outstanding Chapter Engineer Award (2023), the IEEE HOPE Award, and several other recognitions from professional societies and scientific organizations. Dr. Varshney is a Senior Member of IEEE and has been actively associated with IEEE since 2015. He has held several leadership and volunteer positions and remains actively involved in IEEE technical, educational, and professional activities. Through his engagement with the global engineering community, he contributes to knowledge dissemination, professional development, and the advancement of electrical, electronic, and measurement sciences. His career reflects a unique blend of scientific excellence, engineering innovation, professional leadership, and commitment to societal impact, with a continued focus on advancing measurement science, sustainable energy technologies, and industrial competitiveness.

3. Objectives of the Activity

1. Gain comprehensive knowledge of emerging computational technologies such as AI, ML, renewable energy technologies and industrial automation Tools.
2. Understand the role of digital technologies in smart grids, energy management, and Sustainable development
3. Identify current research trends, challenges, and opportunities in computational and energy domains.
4. Hands-on training of computational tools, simulation software, and energy system modeling techniques.

4. Description of the Activity

This FDP provided a dynamic platform that brings together a distinguished panel of experts from both industry and academia to share their expertise in the field of emerging computational and energy technologies to enhance the knowledge and practical skills of faculty members in contemporary technological domains such as Soft computing, Artificial Intelligence (AI), Machine Learning (ML), Renewable Energy Systems, Solar Energy Applications, and Industrial Automation Tools.

The program comprises expert lecturers and hands-on training sessions delivered by eminent academicians and industry professionals. Key topics covered during the whole FDP are Self Tuning Filter Control, Adaptive Control, Reinforcement Learning Control, Q Learning, Power Electronics Converters for Electric Vehicles in industry prospective, Key technologies of Renewable Energy Sources and Electric Vehicles, Various types of Filters, Application of IOT in Industrial Automation, Smart Sensors, Recurrent Neural Networks, Adaptive control of Double Internal Loop Recurrent Neural Network, Standalone System for Agriculture Applications, Time Management System across Nations, Microgrids, Various Topologies and Control of Hybrid Renewable Energy Systems, and Key Power Electronics Concepts for Integrated Renewable Energy Systems.

The Practical Sessions on applications of MATLAB and Industrial tools are demonstrated. The main topics covered are access of various MATLAB Simulink library and its use to implement various models in MATLAB. The prototype of Raspberry Pi is also demonstrated and its pros and cons are discussed.

The participants interacted with various speakers actively. Interactive Q&A sessions clarified concepts and enhances deeper understanding of the technologies. Exchange of ideas and methodologies between the participants and resource person's, and possibility of interdisciplinary collaboration are also explored.

5. Learning Outcomes / Impact

- Improved knowledge of emerging computational & renewable energy technologies, and industrial automation tools.
- Enhanced knowledge of the role of digital technology in smart grids, energy management and sustainable development
- Enhanced understanding of research problems in the field.
- Practical skills of computational tools, simulation platform and energy modeling techniques.
- Mr. Chandrav Sourav was keen to conduct workshop on raspberry Pi for students. Talk initiated to collaborate Uptech Automation with MAIT, Delhi.

6. Photographs & Documentation



FDP Poster



Inauguration of FDP Prof (Dr.) Rajneesh Sharma



Day1, Session by Prof (Dr) Rajneesh Sharma



Day2, Session by Dr. Debashish Mishra



Day 1, Lab session by Prof (Dr) Rajneesh Sharma



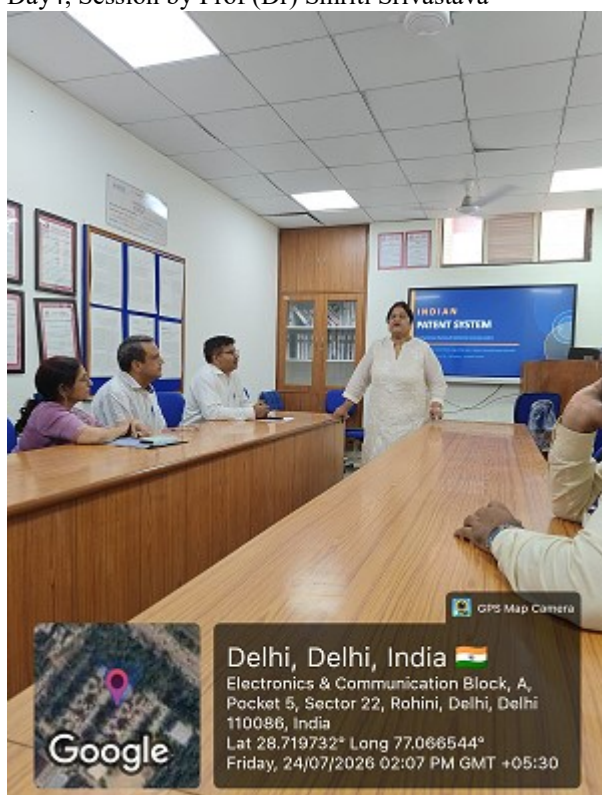
Day3, Session by Mr. Chandrav Sourav



Day4, Session by Prof (Dr) Smriti Srivastava



Day 5, Session by Dr. Anshul Varshney



Day 6, Session by Dr. Monika Gupta



Day6, Session by Dr. Sunil Kumar Pandey

7. Feedback Summary

- Mode of feedback collection: Participants filled Google Form
- Average rating (if applicable): 4.75/5
- Key feedback insights: Participants found the sessions informative, relevant, and inspiring, particularly fusion of computational technologies with energy technologies.

8. Challenges Faced (if any) NO

9. Recommendations / Future Scope

- Integration of AI and ML in energy management, predictive maintenance, and smart grid optimization.
- Exploration of smart grids, battery technologies, electric vehicles, and energy management systems.
- Application of IoT and cloud computing for real-time monitoring and control.
- Encouraging faculty to undertake interdisciplinary research leading to high-quality publications, patents, and externally funded projects.
- Inspiring faculty and students to develop innovative products, startups, and technology-based solutions in computational and energy domains.

10. Annexures

- Annexure I – Attendance Sheet
- Annexure II – Event Poster/Brochure
- Annexure III – Participant Feedback Summary

Report Prepared By:

Name: Dr. Sunil Kumar Pandey

Designation: Associate Professor

Signature:

Verified By:

HoD

Approved By:

Director

