

DR. DUSHYANT SHARMA
Assistant Professor,
Department of Electrical Engineering,
IIT (ISM) Dhanbad



CONTACT INFORMATION	Communication Address: Room No. 109, New Academic Complex <i>Phone: (+91) 3262235159</i> IIT (ISM) Dhanbad <i>Email: dushyant@iitism.ac.in</i> Dhanbad, Jharkhand-826004, India Permanent Address: Near RIICO Railway Crossing, <i>Phone: (+91) 8800562560</i> Old Dak Bungalow Road, <i>Email: dushyant.jjn@gmail.com,</i> Jhunjhunu, Rajasthan-333001, India	
RESEARCH INTERESTS	Automatic load frequency control, renewable energy systems, distributed control in power systems, microgrids, grid forming inverter control, and active power control of interconnected power systems.	
EDUCATION	Ph.D. , Electrical Engineering, October, 2019 <i>Indian Institute of Technology (IIT) Delhi, New Delhi, India</i> • Thesis Title: Design of Novel Control Schemes for Improved Performance of Automatic Generation Control • Thesis Advisor: Prof. Sukumar Mishra • Course Work: Non-conventional Energy Systems & Energy Conservation, Power System Control and Instrumentation, Selective Topics in Advance Control & System Theory-I, Artificial Intelligence for Control Applications, AC Controllers, High Voltage DC Transmission, Power System Dynamics, Selected Topics in Advance Control & System Theory-II • CGPA: 8.875/10 B.Tech.(Hons.) , Electrical Engineering, June, 2012 <i>National Institute of Technology Rourkela, India</i> • CGPA: 9.19/10 AISSE (12th) , CBSE, 2007 <i>Kendriya Vidyalaya Jhunjhunu, Rajasthan, India</i> • Percentage: 85.4 AISSE (10th) , CBSE, 2005 <i>Kendriya Vidyalaya Jhunjhunu, Rajasthan, India</i> • Percentage: 88.8	
RESEARCH AND TEACHING EXPERIENCE	Assistant Professor <i>Department of Electrical Engineering, IIT (ISM) Dhanbad, India</i> – Course Instructor (UG): Basics of Electrical Engineering (EEI101), Utilization of Electrical Energy (EEE202) – Course Co-instructor (UG): Networks Lab (EEC271)	From November, 2021

- Course Instructor (PG): Smart Grid Technology (EEO501)
- Mentoring of PDF (Ongoing) - 1
- Ph.D. Supervision (Ongoing) - 2
- Ph.D. Co-supervision (Ongoing) - 2
- M.Tech. Thesis Supervision (Ongoing) - 1
- M.Tech. Thesis Supervision (Completed) - 2
- B.Tech. Project Supervision (Completed) - 4

Research Associate

From April, 2021 to November, 2021

Department of Electrical & Computer Engineering, Kansas State University, U.S.A.

Young Faculty Associate

From January, 2020 to January, 2021

Department of Electrical Engineering, IIT Jodhpur, India

- Course Instructor (UG): Power System (EE223)
- Course Instructor (PG): Selected Topics in Distributed Generation (EEL7640), Hydropower Fractal 2 (MEL7452)
- Course Co-instructor (PG): Solar Energy & Application (MEL7460), Hydropower (MEL7450)
- Ph.D. Co-supervision - 1
- B.Tech Project Co-supervision - 9

Early-Doc Fellowship

November, 2019 to December, 2019

Department of Electrical Engineering, IIT Delhi, India

Teaching Assistant

January, 2014 to October, 2019

Department of Electrical Engineering, IIT Delhi, India

- TA for the Courses: Introduction to Electrical Engineering (ELL 100), Power Engineering-1 (ELL303), Power Engineering Lab (ELP303), Power System Dynamics (ELL775), Dynamic Modelling and Control (ELL778), and Power System Lab-2 (ELP871).

**INDUSTRIAL
EXPERIENCE**

Graduate Engineer Trainee

June, 2012 to April, 2013

CEAT Limited, Worli, Mumbai, India

- Job Description: Manufacturing

**ADMINISTRATIVE
EXPERIENCE**

- Faculty-in-Charge, Infrastructure (Electrical), IIT (ISM) Dhanbad, since October 2023.
- Coordinator, Infrastructure (Electrical), IIT (ISM) Dhanbad, from January 2023 to October 2023.
- Warden, Jasper hostel, IIT (ISM) Dhanbad, from July 2022 to June 2024.

**RESEARCH
PROJECTS**

As Investigator

- “Investigations of interoperability of grid-forming assets in hybrid power system,” funded by SERB for a duration of 2 years. Budget: INR 3130600. Status: ongoing.
- “Virtual synchronous generators and their coordinated control in AC microgrids,” funded by IIT (ISM) Dhanbad for a duration of 3 years. Budget: INR 1500000. Status: ongoing.

OTHER GRANTS

- “International travel support,” funded by SERB to attend the 2023 American Control Conference.

JOURNAL
PUBLICATIONS

1. V. Vaishnav, A. Jain and **D. Sharma**, “Auxiliary network-enabled attack detection and resilient control of islanded AC microgrid,” *IEEE Transactions on Smart Grid*, vol. 16, no. 2, pp. 1641-1653, March 2025.
2. F. Sadeque, M. Gursoy, **D. Sharma** and B. Mirafzal, “Autonomous control of inverters in microgrid,” *IEEE Transactions on Industry Applications*, vol. 60, no. 3, pp. 4313-4323, May-June 2024.
3. V. Vaishnav, **D. Sharma** and A. Jain, “Quadratic-droop-based distributed secondary control of microgrid with detail-balanced communication topology,” *IEEE Systems Journal*, vol. 17, no. 3, pp. 3401-3412, 2023.
4. S. Singh, V. Vaishnav, A. Jain and **D. Sharma**, “Bounded voltage regulation in a direct current microgrid using barrier lyapunov function with uncertain load current,” *IEEE Control Systems Letters*, vol. 7, pp. 991-996, 2023.
5. V. Vaishnav, **D. Sharma** and A. Jain, “Control of heterogeneous battery energy storage systems-based microgrid connected via detail-balanced communication topology,” *IEEE Control Systems Letters*, vol. 7, pp. 733-738, 2023.
6. M. S. Pilehvar, **D. Sharma** and B. Mirafzal, “Forming interphase micro-grids in distribution systems using cooperative inverters,” *CPSS Transactions on Power Electronics and Applications*, vol. 7, no. 2, 2022, pp. 186-195.
7. **D. Sharma**, F. Sadeque and B. Mirafzal, “Synchronization of inverters in grid forming mode,” *IEEE Access*, vol. 10, 2022, pp. 41341-41351.
8. A. Firdaus, **D. Sharma** and S. Mishra, “Dynamic Power Flow Based Simplified Transfer Function Model to Study Instability of Low Frequency Modes in Inverter Based Microgrids,” *IET Generation, Transmission & Distribution*, vol. 14, no. 23, 2020, pp. 5634-5645.
9. **D. Sharma** and S. Mishra, “Disturbance-observer based frequency regulation scheme for low-inertia microgrid systems,” *IEEE Systems Journal*, vol. 14, no. 1, 2020, pp. 782-792.
10. **D. Sharma** and S. Mishra, “Non-linear disturbance observer-based improved frequency and tie-line power control of modern interconnected power systems,” *IET Generation, Transmission & Distribution*, vol. 13, no.16, 2019, pp. 3564-3573.
11. **D. Sharma**, A. Dubey, S. Mishra and R. K. Mallik, “A frequency control strategy using power line communication in a smart microgrid,” *IEEE Access*, vol. 7, 2019, pp. 21712-21721.
12. N. Nayak, S. Mishra, **D. Sharma** and B. K. Sahu, “Application of modified sine cosine algorithm to optimally design PID/fuzzy-PID controllers to deal with AGC issues in deregulated power system,” *IET Generation, Transmission & Distribution*, vol. 13, no. 12, 2019, pp. 2474-2487.
13. **D. Sharma** and S. Mishra, “Power system frequency stabiliser for modern power systems,” *IET Generation, Transmission & Distribution*, vol. 12, no. 9, 2018, pp. 1961-1969.

14. J. Nanda, **D. Sharma** and S. Mishra, "Performance analysis of automatic generation control of interconnected power systems with delayed mode operation of area control error," *IET The Journal of Engineering*, vol. 2015, no. 4, 2015, pp. 164-173.
1. P. Kumari and **D. Sharma**, "A comparative study of droop and VSG controlled grid forming inverters integrated with D-STATCOM," *2025 IEEE 1st International Conference on Smart and Sustainable Developments in Electrical Engineering (SSDEE)*, Dhanbad, India, 2025, pp. 1-6.
2. P. Kumari and **D. Sharma**, "Performance and stability comparison of grid forming inverters with droop and VSG controls for autonomous microgrids," *2024 IEEE 11th Power India International Conference (PIICON)*, Jaipur, India, 2024, pp. 1-5.
3. F. Sadeque, **D. Sharma** and B. Mirafzal, "Seamless grid-following to grid-forming transition of inverters supplying a microgrid," *2023 IEEE Applied Power Electronics Conference and Exposition (APEC)*, Orlando, FL, USA, 2023, pp. 594-599.
4. V. Vaishnav, **D. Sharma** and A. Jain, "Network-based finite-time secondary level control for critical bus voltage restoration and accurate reactive power-sharing," *2022 22nd National Power Systems Conference (NPSC)*, New Delhi, India, 2022, pp. 584-589.
5. V. Vaishnav, A. Jain and **D. Sharma**, "Finite-time stability analysis of a distributed microgrid connected via detail-balanced graph," *2021 Seventh Indian Control Conference (ICC)*, Mumbai, India, 2021, pp. 365-370.
6. T. Hossen, **D. Sharma** and B. Mirafzal, "Smart inverter twin model for anomaly detection," *2021 IEEE 22nd Workshop on Control and Modelling of Power Electronics (COMPEL)*, Cartagena, Colombia, 2021, pp. 1-6.
7. F. Sadeque, **D. Sharma** and B. Mirafzal, "Power-sharing between grid-forming and grid-following inverters," *2021 IEEE 22nd Workshop on Control and Modelling of Power Electronics (COMPEL)*, Cartagena, Colombia, 2021, pp. 1-5.
8. F. Sadeque, **D. Sharma** and B. Mirafzal, "Multiple grid-forming inverters in black-start: The challenges," *2021 IEEE 22nd Workshop on Control and Modelling of Power Electronics (COMPEL)*, Cartagena, Colombia, 2021, pp. 1-6.
9. **D. Sharma**, S. Mishra and A. Firdaus, "Computation of delay margin in a power system having open channel communication based automatic generation control using Padé approximation," *2019 IEEE International Conference on Environment and Electrical Engineering and 2019 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe)*, Genova, Italy, 2019, pp. 1-6.
10. A. Firdaus, S. Mishra and **D. Sharma**, "Stability enhancement of inverter based autonomous microgrid using electric spring," *2019 IEEE International Conference on Environment and Electrical Engineering and 2019 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe)*, Genova, Italy, 2019, pp. 1-5.
11. **D. Sharma** and S. Mishra, "Impacts of system non-linearities on communication delay margin for power systems having open channel communication based automatic generation control," *2018 IEEMA Engineer Infinite Conference (eTechNXT)*, New Delhi, 2018, pp. 1-5.

12. A. Firdaus, S. Mishra and **D. Sharma**, "Quadratic regulator based optimal state feedback controller for stability improvement of inverter based micro-grids," *TENCON 2017 - 2017 IEEE Region 10 Conference*, Penang, 2017, pp. 2165-2170.
13. **D. Sharma**, S. Mishra and A. Firdaus, "Multi objective gain tuning approach for time delayed automatic generation control," *TENCON 2017 - 2017 IEEE Region 10 Conference*, Penang, 2017, pp. 2896-2900.
14. A. Tomar, **D. Sharma** and S. Mishra, "An active power management strategy in a microgrid having static and rotating generators considering generation limits using water pumping loads," *2017 International Conference on Computer, Communications and Electronics (Comptelix)*, Jaipur, 2017, pp. 484-488.
15. S. Mishra, **D. Sharma**, Y. Kumar and D. Pullaguram, "Lyapunov based frequency independent current controller for grid connected single phase PV systems," *2016 7th India International Conference on Power Electronics (IICPE)*, Patiala, 2016, pp. 1-6.
16. **D. Sharma**, S. Mishra and J. Nanda, "Micro-grid operation and control of Photovoltaic power with canal based small hydro power plant," *2016 IEEE Region 10 Conference (TENCON)*, Singapore, 2016, pp. 1289-1293.
17. **D. Sharma**, R. K. Mallik, S. Mishra, A. Dubey and V. Ranjan, "Voltage control of a DC microgrid with double-input converter in a multi-PV scenario using PLC," *2016 IEEE Power and Energy Society General Meeting*, Boston, MA, 2016, pp. 1-5.
18. S. Mishra, R. Sharma and **D. Sharma**, "Coordinated active power control of wind, solar and diesel generator in a microgrid," *IFAC-PapersOnLine*, vol. 48, no. 30, 2015, pp.7-12.
19. A. Dubey, **D. Sharma**, R. K. Mallik and S. Mishra, "Modeling and performance analysis of a PLC system in presence of impulsive noise," *2015 IEEE Power & Energy Society General Meeting*, Denver, CO, 2015, pp. 1-5.
20. B. Sen, **D. Sharma** and B. C. Babu, "DSRF and SOGI based PLL-two viable scheme for grid synchronization of DG systems during grid abnormalities," *2012 Students Conference on Engineering and Systems*, Allahabad, Uttar Pradesh, 2012, pp. 1-6.
21. **D. Sharma**, B. Sen and B. C. Babu, "Improved grid synchronization algorithm for DG system using DSRF PLL under grid disturbances," *2012 Students Conference on Engineering and Systems*, Allahabad, Uttar Pradesh, 2012, pp. 1-6.

BOOK CHAPTERS

1. S. Mishra, **D. Sharma**, S. N. Singh, K. Y. Lee, M. M. Farsangi, H. Nezamabadipour, EM Voumvoulakis, N. D. Hatzargyriou, X. Wu, and L. Ma, "Power System and Power Plant Control," Chapter 4 of *Applications of Modern Heuristic Optimization Methods in Power and Energy Systems*, John Wiley & Sons, 2020.
2. S. Mishra and **D. Sharma**, "Control of Photovoltaic Technology," Chapter 19 of *Electric Renewable Energy Systems*, Academic Press publications, 2016.

CONFERENCES
AND WORKSHOPS
ATTENDED

- 2024 International Conference on Sustainable Power and Energy Research (ICSPER-2024), NIT Waranag, 1-3 March, 2024.
- 2023 American Control Conference (ACC), San Diego, CA, USA, 31 May-2 June, 2023.
- 2019 IEEE International Conference on Environment and Electrical Engineering and 2019 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe), Genova, Italy, 11-14 June, 2019.
- 2018 IEEMA Engineer Infinite Conference (eTechNxT), New Delhi, 13-14 March, 2018.
- 2016 IEEE Region 10 Conference (TENCON), Singapore, 22-25 November, 2016.
- 2016 IEEE Power and Energy Society General Meeting, Boston, MA, 26-30 July, 2016.
- 9th IFAC Symposium on Control of Power and Energy Systems (CPES) - 2015, New Delhi, India, 9-11 December, 2015.
- 9th Workshop on Power Line Communications (WSPLC 15), Klagenfurt, Austria, 21-22 September, 2015.
- 2012 Students Conference on Engineering and Systems, Allahabad, Uttar Pradesh, 16-18 March, 2012.

INVITED TALKS &
GUEST LECTURES

- Lecture on 14 September 2023 on the topic, “Developing simulation skills for design and analysis of dynamical engineering systems”, in the one-week short term training programme on “Challenges, applications, and technologies in engineering research and designs” held at Arka Jain University from 12 September 2023 to 16 September 2023.
- Invited talk on 26 July 2023 on the topic, “Advanced control techniques for inverters in autonomous power systems”, at Netaji Subhas University of Technology, Delhi.
- National webinar on 20 August 2022 on the topic, “Understanding control and operation of autonomous inverters”, organized by Kalinga University.
- Invited talk on 24 July 2022 on the topic, “Control aspects of grid forming inverters”, during the one-week high-end workshop on “Power electronics interface for green energy sources and e-mobility” organized by Birla Institute of Technology Mesra held from 18 July 2022 to 24 July 2022.
- Invited talk on 6 September 2021 on the topic, “Understanding real-time simulations: Applications for Power Engineering”, during the one-week faculty development programme on “Innovative research & development trends in electronics & communication engineering,” organized by G.L. Bajaj Institute of Technology & Management, Greater Noida, held from 6 September 2021 to 12 September 2021.

PROFESSIONAL
EXPERIENCE

- Technical Reviewer for:
IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, IEEE Systems Journal, IEEE Access, IET Generation, Transmission & Distribution, IET Power Electronics, The International Journal of Power and Energy Systems, International Transactions on Electrical Energy Systems, INAE Letters, Current Science, Scientific Reports.
- TPC Member/Organizing Committee Member/Track Chair/Topic Chair/Advisory Committee Member for:
22nd National Power System Conference 2022, IEEE Energy Conversion Congress & Expo (ECCE) 2022, ICSPER-2024.
- Membership:
Member of IEEE, The Institution of Engineers (India)

PROFESSIONAL
ACCOMPLISHMENTS

- Recipient of **Best paper award** in 2024 ICSPER-2024, NIT Waranag, 2024

	• Recipient of POSOCO power system awards (PPSA)-2019 under the Doctoral Category • Recipient of Research excellence travel award of Indian Institute of Technology Delhi in the year 2019 • Recipient of Best Ph.D. student poster award in IEEE IEEEIC 2019, Genoa, Italy • Recipient of Best paper award in IEEE TENCON 2017, Penang, Malaysia
LEADERSHIP AND MANAGEMENT SKILLS	• Served as a lead volunteer for the IEEE 20th International Conference on Intelligent Systems Applications to Power Systems (ISAP) 2019, held during 10-14 December, 2019 at the Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India. • Served as a lead volunteer for the IEEE 6th International Conference on Power Systems, 2016 (ICPS 2016) held during 4-6 March, 2016 at the Indian Institute of Technology Delhi and India Habitat Centre, New Delhi, India. • Served as a lead volunteer for the 9th IFAC Symposium on Control of Power and Energy Systems (CPES)-2015 held during 9-11 December, 2015 at the Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India.
SOFTWARE SKILLS	MATLAB, DIgSILENT, RT-LAB, PSpice, L ^A T _E X
IMPORTANT LINKS	• <i>Google Scholar</i>: https://scholar.google.com/citations?user=aWtCveAAAAAJ&hl=en&oi=ao • <i>Scopus</i>: https://www.scopus.com/authid/detail.uri?authorId=57092450400 • <i>Web of Science ResearcherID</i>: https://www.webofscience.com/wos/author/record/2341701
PERSONAL INFORMATION	• Date of birth: 29 October, 1989 • Gender: Male • Father's name: Mahesh Kumar Sharma • Mother's name: Rachana Sharma • Marital status: Married • Nationality: Indian • Languages known: English, Hindi
REFERENCES	Dr. Behrooz Mirafzal Professor Department of Electrical and Computer Engineering Kansas State University, Manhattan, Kansas, U.S.A E-mail: mirafzal@ksu.edu Phone: +1-9548098475 Dr. Anil Pahwa Professor Department of Electrical and Computer Engineering Kansas State University, Manhattan, Kansas, U.S.A E-mail: pahwa@k-state.edu Phone: +1-7853415299 Dr. Sukumar Mishra Professor Department of Electrical Engineering IIT Delhi, Hauz Khas, New Delhi, India E-mail: sukumar@ee.iitd.ac.in Phone: +91-(11)-2659-1074