


Dr. Deepak Reddy Pullaguram

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RESEARCH INTERESTS	Microgrid systems, renewable integration, power system dynamics, power system optimization.	
EDUCATION	Indian Institute of Technology Delhi , New Delhi, India. Ph.D., Electrical Engineering, Power systems. Oct, 2018. CGPA: 9.25/10, <ul style="list-style-type: none">• Thesis Topic: Distributed control strategies for AC and DC microgrids National Institute of Technology Warangal , Telangana, India. M.Tech., Electrical Engineering, Power systems, May, 2014. CGPA: 8.62/10 Jawaharlal Nehru Technological University Hyderabad , Telangana, India. B.Tech., Electrical and Electronics Engineering , May 2012. Percentage: 81.96%	
WORK EXPERIENCE	Indian Institute of Technology Kharagpur , West Bengal, India. Assistant Professor	Sept 2022 to Present
	National Institute of Technology Warangal , Warangal, Telangan, India. Assistant Professor	Dec 2019 to Aug 2022
	University of Texas Arlington , Arlington, TX, USA. Assistant Professor of Research Research Associate	June 2019 to Nov 2019 Nov 2018 to May 2019
RESEARCH OUTCOME	Journals - 22, Conferences - 24, Book chapters - 2, Patent Granted - 2, Google Scholar: <i>h</i>-index: 14, Scopus: <i>h</i>-index: 12, Web of Science: <i>h</i>-index: 10	
PUBLICATIONS	Journals: <ol style="list-style-type: none">1. P. S. Tadepalli, D. Pullaguram and M. N. Alam, “Cyber-Resilient Strategy for DC Microgrids Against Concurrent FDI and DoS Attacks,” in IEEE Transactions on Industrial Informatics, 2025 <i>Early Access</i>.2. P. S. Tadepalli, D. Pullaguram and M. N. Alam, “Resilient Dynamic Average Secondary Control for DC Microgrids Against FDI Attacks,” in IEEE Transactions on Industry Applications, 2025 <i>Early Access</i>.3. K. V. Katariya, D. R. Pullaguram and A. K. Pradhan, “Frequency Estimation for Energy Rate-Based Forced Oscillation Source Identification Using Its Properties on Modes Decomposed by Matrix Pencil Function,” in IEEE Transactions on Instrumentation and Measurement, vol. 74, pp. 1-13, 2025.4. P. S. Tadepalli, D. Pullaguram and M. N. Alam, “DC Microgrid Average Voltage Regulation and Current Sharing With Solely Current Communication,” in IEEE Journal of Emerging and Selected Topics in Industrial Electronics, vol. 6, no. 2, pp. 457-463, April 2025.5. D. Annavaram, S. Mishra and D. Pullaguram, “Resilient Event-Driven Distributed Control for DC Microgrids Against False Data Injection Attacks,” in IEEE Transactions on Smart Grid, vol. 15, no. 6, pp. 5358-5372, Nov. 2024.6. G. S. Abhishek, S. K. Injeti and D. R. Pullaguram, “Enhanced Validation of Intelligent Control Algorithms in AC Microgrids,” in <i>IEEE Canadian Journal of Electrical and Computer Engineering</i>, vol. 47, no. 3, pp. 148-157, 2024.7. Venkateswara Rao Kagita, Sanjaya Kumar Panda, Ram Krishan, P. Deepak Reddy and Jabba Aswanth, “High-performance computing for static security assessment of large power systems,” <i>Connection Science</i>, vol. 35, no.1, 2023.	

8. Ramesh Gugulothu, Nagu Bhookya, and **Deepak Pullaguram**, B. Chitti Babu, "Optimal Coordinated Energy Management Strategy for standalone Solar Photovoltaic System with Hybrid Energy Storage", *Journal of Energy Storage- Elsevier*, Vol. 67, 2023.
9. Shan Zuo, **Deepak Pullaguram**, Frank L. Lewis, and Ali Davoudi, "Resilient AC Microgrids against Correlated Attacks," *IEEE access*. vol. 11, pp. 1603-1612, 2023.
10. Ramesh Gugulothu, Nagu Bhookya, and **Deepak Pullaguram**, "Energy Management Strategy for Standalone DC Microgrid with PV, Fuel Cell, and BESS", *Journal of Energy Storage- Elsevier*, Vol. 57, 2023.
11. T. Phani Swecha, **Deepak Pullaguram**, "Distributed Control Microgrids: Cyber Attack Models, Impacts and Remedial Strategies," *IEEE Transactions on Signal and Information Processing Over Networks* vol. 8, pp. 1008-1023, 2022.
12. Ramesh Gugulothu, Bhookya Nagu and **Deepak Pullaguram**, "A computationally efficient jaya optimization for fuel cell maximum power tracking", *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, vol.44 no.1, pp. 1541-1565, 2022.
13. **Deepak Pullaguram**, R. Madani, T. Altun and A. Davoudi, "Optimal Power Flow in AC/DC Microgrids with Enhanced Interlinking Converter Modeling," in *IEEE Journal of Emerging and Selected Topics in Industrial Electronics*, vol. 3, no. 3, pp. 527-537, July 2022.
14. **Deepak Pullaguram**, Ramtin Madani, Tuncay Altun, and Ali Davoudi, "Small Signal Stability Constrained Optimal Power Flow for Inverter Dominant Autonomous Microgrid", in *IEEE Transactions on Industrial Electronics*, vol. 69, no. 7, pp. 7318-7328, July 2022.
15. **Deepak Pullaguram**, Rubi Rana, S. Mishra, and N. Senroy, "A fully distributed hierarchical control strategy for multi-inverter based AC microgrids," in *IET Renewable Power Generation* vol. 14, no. 13, pp. 2468-2476, Oct. 2020.
16. Rishi Kant Sharma, S. Mishra, Senior Member **D. Pullaguram**, "A robust H_∞ multivariable stabilizer design for droop based autonomous AC microgrid," in *IEEE Transactions on Power Systems* vol. 35, no. 6, pp. 4369-4382, Nov. 2020.
17. S. Madichetty, **D. Pullaguram** and S. Mishra, "A standalone BLDC based solar air cooler with MPP tracking for improved efficiency," in *CSEE Journal of Power and Energy Systems*, vol. 5, no. 1, pp. 111-119, March 2019.
18. Subham Sahoo, **D. Pullaguram**, Sukumar Mishra, Jianzhong Wu, Nilanjan Senroy, "A containment based distributed finite-time controller for bounded voltage regulation & proportionate current sharing in DC microgrids," *Applied Energy*, Vol. 228, Pages 2526-2538, 2018.
19. **D. Pullaguram**, S. Mishra and N. Senroy, "Event-Triggered Communication Based Distributed Control Scheme for DC Microgrid," *IEEE Transactions on Power Systems*, vol. 33, no. 5, pp. 5583-5593, Sept. 2018.
20. **D. Pullaguram**, S. Mishra, N. Senroy and M. Mukherjee, "Design and Tuning of Robust Fractional Order Controller for Autonomous Microgrid VSC System," in *IEEE Transactions on Industry Applications*, vol. 54, no. 1, pp. 91-101, Feb. 2018.
21. **D. Pullaguram**, Sukumar Mishra, Nilanjan Senroy, "Coordinated single-phase control scheme for voltage unbalance reduction in low voltage network," *Philosophical. Trans. Royal Society A*; DOI: 10.1098/rsta.2016.0308, July 2017.
22. S. Mishra, **D. Pullaguram**, S. Achary Buragappu and D. Ramasubramanian, "Single-phase synchronverter for a grid-connected roof top photovoltaic system," in *IET Renewable Power Generation*, vol. 10, no. 8, pp. 1187-1194, 9 2016.

Conferences:

1. A. Mishra, A. Mallick, A. R. Hota, **D. Pullaguram** and P. Bajpai, "A Transactive Energy Framework for Real-Time Primary Frequency Support by Active Distribution Networks," 2024 IEEE PES Innovative Smart Grid Technologies - Asia (ISGT Asia), Bengaluru, India, 2024, pp. 1-6,
2. M. Srivalli, S. Mukhopadhyay and **D. Pullaguram**, "Partial Power Dual Active Bridge Converter Control for Grid Connected Battery Hub Systems," 2024 IEEE Power & Energy Society General Meeting (PESGM), Seattle, WA, USA, 2024, pp. 1-5.

3. P. S. Tadepalli, **D. Pullaguram** and M. N. Alam, "An FDI Resilient Dynamic Average Distributed Control for DC Microgrids," 2023 IEEE International Conference on Power Electronics, Smart Grid, and Renewable Energy (PESGRE), Trivandrum, India, 2023, pp. 1-6.
4. Karan Vasudev Katariya, Subhash Kumar, Palash Jyoti Borah, Samar Chandra De, Amaresh Mallick, Ashok Kumar Pradhan, and **Deepak Pullaguram**, "An Investigation of Recent Power System Oscillations in North Eastern Region Grid of India," 2023 10th IEEE International Conference on Power Systems (ICPS), Cox's Bazar, Bangladesh, 2023, pp. 1-6.
5. V. Patil, S. Mishra and **D. R. Pullaguram**, "Performance Analysis of Homogeneous and Heterogeneous Microgrid based on Droop and VSG-Based Control," 2023 IEEE International Conference on Power Electronics, Smart Grid, and Renewable Energy (PESGRE), Trivandrum, India, 2023, pp. 1-6
6. K. V. Katariya et al., "An Investigation of Recent Power System Oscillations in North Eastern Region Grid of India," 2023 10th IEEE International Conference on Power Systems (ICPS), Cox's Bazar, Bangladesh, pp. 1-6, 2023.
7. P. Sai Nandini, R. Krishan, and **D. Pullaguram**, "Static Security Assessment of Large Power Systems Under Contingency Cases," 2022 IEEE 10th Power India International Conference (PIICON), New Delhi, India, pp. 1-6, 2022.
8. P. S. V. Prabhakar, R. Krishan and **D. R. Pullaguram**, "Static Security Assessment of Large Power Systems Under N-1-1 Contingency," 2022 22nd National Power Systems Conference (NPSC), New Delhi, India, pp. 35-40, 2022.
9. Kodanda Ram Nagamalli, Phani Swecha Tadepalli, **Deepak Pullaguram**, "Effect of CPL on the Stability of DC Microgrid", *IEEE 2nd International Conference on Sustainable Energy and Future Electric Transportation (SeFeT)*, Hyderabad, India, pp. 1-6, 2022.
10. Maneesh Kumar, Ram krishan, **Deepak Pullaguram**, "Observer based paradigm for resilient secondary control of AC microgrids", *IEEE Conference on electronics, computing and communication technologies (CONECCT)*, Bangalore, India, pp. 1-6, 2022.
11. S.R. Mudaliyar, **D. Pullaguram**, S. Mishra and N. Senroy, "Cascaded Fractional Order and Sliding Mode Control for an Autonomous Voltage Source Inverter," *2018 IEEE Power & Energy Society General Meeting (PESGM)*, Portland, OR, 2018, pp. 1-5.
12. **D. Pullaguram**, S. Mishra and N. Senroy, "Modeling and design of virtual inertia based rooftop PV," 2018 *IEEMA Engineer Infinite Conference (eTechNxt)*, New Delhi, 2018, pp. 1-6.
13. **D. Pullaguram**, S. R. Mudaliyar, S. Mishra and N. Senroy, "Isolated PV battery management system to power home appliances," 2017 *7th International Conference on Power Systems (ICPS)*, Pune, India, 2017, pp. 755-760.
14. M. Kumar, Y. N. Babu, **D. Pullaguram** and S. Mishra, "A high voltage gain non-isolated modified three-port DC/DC converter based on integrated Boost-Cuk topology," 2017 *IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC)*, Bangalore, India, 2017, pp. 1-6.
15. Subham Sahoo, Chenghua Zhang, **Deepak Pullaguram**, Sukumar Mishra and Nilanjan Senroy, "Investigation of Distributed Cooperative Control for DC Microgrids in Different Communication Medium," presented in *9th International Conference on Applied Energy, ICAE 2017*
16. **D. Pullaguram**, Somesh Bhattacharya, Sukumar Mishra and Nilanjan Senroy, "A Fuzzy Assisted Enhanced Control for Utility Connected Rooftop PV," *IFAC World Congress Meeting 2017*, France, Vol. 50, Issue. 1, July 2017, Pages 7693-7698
17. S. Sahoo, **D. Pullaguram**, S. Mishra and N. Senroy, "An adaptive droop based cooperative control framework in DC microgrids," *2017 IEEE Power & Energy Society General Meeting*, Chicago, IL, 2017, pp. 1-5.
18. S. Sahoo, **D. Pullaguram** and S. Mishra, "A consensus priority algorithm based V2G charging framework for frequency response," *2016 IEEE 7th Power India International Conference (PIICON)*, Bikaner, 2016, pp. 1-6.
19. 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.

20. **D. Pullaguram**, S. Mishra and S. Banerjee, "Standalone BLDC based solar air cooler with MPPT tracking for improved efficiency," *2016 IEEE 7th Power India International Conference (PIICON)*, Bikaner, 2016, pp. 1-5.
21. **D. Pullaguram**, M. Mukherjee, S. Mishra and N. Senroy, "Non-linear fractional order controllers for autonomous microgrid system," *IEEE 6th International Conference on Power Systems (ICPS)*, New Delhi, 2016, pp. 1-6.
22. M. Mukherjee, **D. Pullaguram** and S. Mishra, "Dynamic droop based inverter control for autonomous microgrid," *Biennial International Conference on Power and Energy Systems: Towards Sustainable Energy (PESTSE)*, Bangalore, 2016, pp. 1-6.
23. Sukumar Mishra, Subham Sahoo, **Deepak Reddy Pullaguram**, "A Systematic State of Charge based V2G Charging Framework for Frequency Response," *IFAC-PapersOnLine*, Volume 48, Issue 30, 2015, Pages 31-36.
24. T. Murali Krishna, B. Subrahmanyam, **D. Reddy**, N. V. Ramana and S. Kamakshaiah, "Power flow algorithm for radial distribution system with voltage sensitive loads," *Annual IEEE India Conference (INDICON)*, Kochi, 2012, pp. 1069-1071.

PATENTS

1. Sukumar Mishra, **Deepak Pullaguram** and Dhiman Das, "A Back to Back DC-DC-PV Battery Isolated System to Mimic Inverter to Drive Daily Appliances," Indian Provisional Patent No. 535174, Granted in 2024.
2. Sukumar Mishra, **Deepak Pullaguram** and Dhiman Das, "Low Disruption Current Estimated Boost Converter For PV Maximum Power Extraction," Indian Provisional Patent No. 491276, Granted in 2023.

BOOK CHAPTER

1. **Deepak Pullaguram**, Subham Sahoo, "Cyber security threats in multi-agent microgrids", *6th Chapter of Cyber Security for Microgrids*, IET Digital Library(Energy) pp. 105-125, 2022.
2. S. Mishra, **Deepak Pullaguram**, "Photovoltaic controller Design," in *6th chapter of Application of modern heuristic optimization methods in power and energy systems*, IEEE Press John Wiley and Sons Ltd., Hoboken, United States, 2020.

RESEARCH PROJECTS

1. "Development and Testing of Cyber Resilient strategies for Converter Dominant Microgrid Systems," ISIRD, SRIC, IIT Kharagpur, Sept 2023 - Sept 2026 (**INR 25,00,000**).
2. "High sensitive grounded conductor identification for human safety in low tension (LT) system," CPRI Bangalore, July 2023- Oct 2024, (**INR 21,56,000**) (**Co-PI**).
3. "Convex optimization based economic and stable operation of microgrid system," Start-up Research Grant (SRG) Sponsored by *SERB-DST*, Dec 2020 - Dec 2022, (**INR 32,04,860**).
4. "Dynamic and Static Security Analysis of Large Power System using High-Performance Computing," HPC Applications, Sponsored by *National Supercomputing Mission (NSM)-DST*, Mar 2021 - Mar 2023, (**INR 45,58,160**) (**Co-PI**).
5. "Stability Improvement of Microgrid System with Uncertain Generation and Loads," Research Seed (RSM) sponsored by National Institute of Technology Warangal June 2020 - June 2022, (**INR 19,99,500**).

AWARDS/ RECOGNITION/ SCHOLARSHIPS

- POWERGRID-IEEE India Council Excellence Award in Young Engineer Category - 2024 by Power Grid India and IEEE India Council.
- INAE Young Associate 2024 Awarded by Indian National Academy of Engineering for excellence in engineering research.
- Received Scientific High-Level Visiting Fellowships (SSHN)-2023 Award from The French Institute in India (IFI), French Government.
- Received CSEE JPES Excellent Paper Award for Paper entitled "A standalone BLDC based solar air cooler with MPP tracking for improved efficiency".

- Received POSOCO Power System Award (PPSA-2018) for best thesis in Power and Energy systems.
- IRD Start-up Action Fund, by Industrial R&D Unit, IIT Delhi, India, selected as one of the top 25 startup ideas for year 2018
- Received A P J Abdul Kalam Memorial International Travel Award for IFAC World Congress 2017 conference

ADMINISTRATIVE
ROLES/ACTIVITIES

- Research Scholar Coordinator of Power and Energy Systems Specialization, IIT Kharagpur.
- Assistant Warden for J.C.Bose Hall
- Faculty Advisor for B.tech 2022-26, Electrical Engineering at IIT Kharagpur.
- Laboratory In-charge, Co In-charge (Energy system Lab), Electrical Engineering.
- Committee to look weaker students, Electrical Engineering

PROFESSIONAL/
EXTENSION
ACTIVITIES

- IEEE Senior Member, IEEE PES Society Member
- IEEE Student Activity Co-Chair 2024-25
- Organizing Coordinator for International Conference on Sustainable Power & Energy Research-2024
- IEEE New Initiative Chair member at Kharagpur Section from 2022-23

COMPUTER
SKILLS

- Simulation software: Simulink, RT-LAB, PSCAD, DIgSILENT, PSS@E.
- OPAL-RT eMegasim (real time simulation, Hardware-in-loop (HIL), Power Hardware-in-loop (PHIL)), Typhoon based Hardware in loop, dSPACE Microlab-box.
- Languages: Matlab, CPLEX toolbox, CVX toolbox, C, Python.