

Niloy Patari
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United States

Education

2017–21 **Ph.D.**, Electrical Engineering, Washington State University, Pullman, WA, GPA-3.72/4
2013–15 **M.Tech.**, Power & Energy Systems, Indian Institute of Technology, Kharagpur, India, GPA-8.34/10
2009–13 **B.Tech.**, Electrical Engineering, Jadavpur University, Kolkata, India, GPA-7.73/10

Work Experience

Nov 2023– **Post-Doctoral Fellow**, [West Virginia University](#), Morgantown, West Virginia
Present

- Working on Machine Learning Assisted Distributed Optimization Algorithms for Distribution Power Systems (reviews, challenges, and path forward).
- Hyperparameter tuning of distributed voltage control algorithm using Actor-Critic Models.
- Working on retail markets for distribution grids focused on prosumer benefits in the secondary network.
- Laboratory-prototype implementation of distributed algorithms for distribution grids considering cyber-physical models and real-time simulation software.

Mar 2023– **Power System Simulation & Analytics Engineer**, [Sentient Energy](#), Milpitas, CA
Oct 2023

ENGO and Optimal Capacitor Placement Analysis for Volt-Var Control

- Implemented optimal capacitor and ENGO placement analysis considering Grid-Edge control for conservation voltage reduction benefits in distribution feeders of Eversource Energy, First Energy, and New Hampshire Electric Co-op using Synergi and MilSoft.
- Developed a Python-Synergi and Python-MilSoft interactive platform to visualize secondary-level voltage improvements in secondary distribution circuits and annual energy savings for electric utilities using Tableau.

*Expected.

- Dec 2022–
Mar 2023 **Data Consultant, [Washington State University](#), Pullman, Washington**
- Volt-Var Control and ZIP Parameter Tracking**
- Implemented an aggregated ZIP load estimation method for DER-integrated distribution systems.
- Jan 2022–
Dec 2022 **Senior Quantitative Analyst, Data Analysis and Analytics, [National Grid](#), Waltham, Massachusetts**
- Electric Load Forecasting for Commercial and Utility-Scale Projects**
- Utilized Massachusetts and New York feeder GIS models to select parcels of land nearest to distribution feeders using ArcGIS Pro software.
 - Generated forecasts of commercial and utility-scale solar, solar-plus-storage, and standalone storage projects considering Salesforce queue data and GridTwin forecasts for Niagara Mohawk (NIMO), Nantucket (NANT), and Massachusetts Electric Company (MECO) jurisdictions from 2022–2050.
- Electric Load Forecasting for Rooftop Solar Projects**
- Leveraged zip code-level and zone-level information to generate forecasts of rooftop solar projects in NIMO, NANT, and MECO jurisdictions from 2022–2050.
- Aug 2017–
Dec 2021 **Graduate Research Assistant, [Washington State University](#), Pullman, Washington**
- Centralized Volt-Var Control**
- Implemented centralized volt-var control for unbalanced multiphase feeders in GridLAB-D with traditional regulator and capacitor controls as well as smart battery and solar inverter controls.
- De-centralized Volt-Var Control**
- Implemented decentralized sensitivity-based volt-var control in GridLAB-D for distribution networks of Avista Corporation.
- Distributed Volt-Var Control/Optimization**
- Developed a primal-dual decomposition-based distributed voltage control for unbalanced distribution feeders using MATLAB-OpenDSS COM interface. This work was done in collaboration with Harvard University.
 - Developed a dual-decomposition-based distributed optimal voltage control algorithm for multiphase distribution feeders, considering both active and reactive power injection from DERs. This work was in collaboration with Harvard University and implemented using MATLAB-OpenDSS COM interface.
 - Implemented Proximal Atomic Coordination (PAC) for distributed voltage optimization in unbalanced distribution feeders in collaboration with MIT.
- May 2021–
Aug 2021 **Research Aide Student, [Argonne National Laboratory](#), Chicago, Illinois**

- Developed sensitivity-based distributed voltage control algorithms for multiphase distribution systems using the Python-OpenDSS interface (pyDSS).
- Aug 2015–
July 2017 **Research Assistant, [Indian Institute of Technology, Kharagpur](#), Kharagpur, India**
- Proposed a novel torque control method to introduce Low Voltage Ride Through (LVRT) capabilities in wind farms.
 - Studied transient stability analysis of the proposed wind farm in power systems.
 - Integrated the proposed wind farm model into medium-voltage DC (MVDC) systems using double active bridge (DAB) converters.

Projects

- 2024–2025 **Solar Testbed (DOE/WVHTF)**
- Modelling of Li-ion and non Li-ion utility scale battery in Typhoon-HIL
 - Assessing impacts of grid applications of such battery types in real life utility feeders and microgrids
 - Assessing key performance indices (KPI) for performance of battery types based on specific grid requirements
- 2023–2025 **STTR Phase I: Datapoint Measurements of Second Life Batteries for State of Health and State of Charge (Parthian/NSF)**
- Conducted state-of-health and state-of-charge measurements for second-life batteries.
 - Designed experimental protocols for data acquisition and performance validation.
 - Developed machine-learning models to predict battery degradation and optimize reuse strategies.
- 2020–2024 **CPS: DFG Joint: Medium: Collaborative Research: Data-Driven Secure Holonic Control and Optimization for the Networked CPS (aDaption) + US-India Supplement (NSF/DFG)**
- Developed distributed optimization algorithms for cyber-physical systems in power grids.
 - Implemented data-driven models for secure holonic control in unbalanced distribution feeders.
 - Contributed to secure and resilient networked CPS with a focus on U.S.-India collaboration.
- 2018–2024 **Augmenting and Advancing Cognitive Performance of Control Room Operators for Power Grid Resiliency (NSF)**
- Enhanced control room operator performance through advanced decision-support tools.
 - Developed cognitive models to analyze and predict operator responses under stress.
 - Designed visualization systems to improve situational awareness and operational resiliency.
- 2017–2023 **UI-ASSIST: US-India Collaborative for Smart Distribution System with Storage (DOE/DST/Washington State University)**
- Reviewed implementation and research needs of distributed algorithms for voltage control in distribution power grids.
 - Developed a centralized voltage control algorithm for ADMS-MEMS interactive grid-connected DC microgrid in unbalanced distribution feeders using RTDS.
- 2017–2018 **Cognitive Flexibility of Power System Operators (NSF)**

- Developed a MATLAB-GUI-based alarm processing tool to enhance cognitive flexibility of power system operators.

Publications

 [Google Scholar](#)

Journal Articles

- [J1] M. Rafy, P. Sharma, **N. Patari**, A. Srivastava, and A. Sharma, “Edge-driven distributed control for power distribution: A real-time hardware-in-the-loop testbed for industrial automation and applications,” *IEEE Transactions on Industry Applications*, 2026.
- [J2] H. M. Mustafa, **N. Patari**, S. Basumallik, and A. K. Srivastava, “Augmenting decision-making of human-in-the-loop operators for resilient cyber-power systems,” *IEEE Transactions on Industrial Cyber-Physical Systems*, 2025.
- [J3] S. Majumdar, **N. Patari**, A. K. Srivastava, P. Srivastava, and A. Annaswamy, “Epistemology of voltage control in DER-rich power system,” *Electric Power Systems Research*, 2023.
- [J4] **N. Patari**, A. K. Srivastava, and N. Li, “Distributed Optimal Voltage Control Considering Latency and Asynchronous Communication for Three Phase Unbalanced Distribution Systems,” *IEEE Transactions on Power Systems*, 2022.
- [J5] **N. Patari**, V. Venkataramanan, A. K. Srivastava, D. K. Molzahn, N. Li, and A. Annaswamy, “Distributed Optimization in Distribution Systems: Use Cases, Limitations, and Research Needs,” *IEEE Transactions on Power Systems*, 2022.
- [J6] **N. Patari**, A. K. Srivastava, G. Qu, and N. Li, “Distributed Optimal Voltage Control for Three Phase Unbalanced Distribution Systems with DERs and Practical Constraints,” *IEEE Transactions on Industry Applications*, 2021.
- [J7] S. Pannala, **N. Patari**, A. K. Srivastava, and N. P. Padhy, “Effective Control and Management Scheme for Isolated and Grid Connected DC Microgrid,” *IEEE Transactions on Industry Applications*, 2020.

Peer-reviewed Conference Proceedings

- [C1] E. O. Boateng, **N. Patari**, C. Nwakanma, and A. Srivastava, “Real-time metrics-based evaluation of bess performance for peak-shaving,” in *Texas Power & Energy Conference (TPEC)*, 2026.
- [C2] **N. Patari** and A. K. Srivastava, “Physics-informed hyperparameter tuning for accelerated distributed voltage control in distribution grids,” in *Texas Power & Energy Conference (TPEC)*, 2026.
- [C3] **N. Patari** and A. K. Srivastava, “Accelerated distributed optimization for voltage control in power distribution systems,” in *IEEE PES T&D*, 2026.
- [C4] R. Arunkumar, **N. Patari**, and A. K. Srivastava, “Ml-assisted hyperparameter tuning for distributed voltage control algorithm in distribution systems,” in *Texas Power & Energy Conference (TPEC)*, 2025.

- [C5] P. Chatterjee, **Patari, Niloy**, and A. K. Srivastava, “Impact of dynamic load-altering attacks on td systems: Insights from centralized and distributed voltage control approaches,” in *2025 IEEE Industry Applications Society Annual Meeting (IAS)*, IEEE, 2025, pp. 1–5.
- [C6] **N. Patari** and A. K. Srivastava, “Accelerated distributed optimization for voltage control in multiphase distribution power systems,” in *IEEE Power & Energy Systems General Meeting (PESGM)*, 2025.
- [C7] P. S. Sarker, **N. Patari**, B. Ha, S. Majumder, and A. K. Srivastava, “Cyber-power testbed for analyzing distributed control performance during cyber-events,” in *10th Workshop on Modelling and Simulation of Cyber-Physical Energy Systems (MSCPES)*, 2022.
- [C8] **N. Patari**, A. K. Srivastava, G. Qu, and N. Li, “Distributed optimal voltage control for three phase unbalanced distribution systems with ders,” in *IAS Annual Meeting*, Detroit, US, 2020.
- [C9] S. Pandey, N. Patari, and A. K. Srivastava, “Cognitive flexibility of power grid operator and decision making in extreme events,” in *2019 IEEE Power & Energy Society General Meeting (PESGM)*, IEEE, 2019, pp. 1–5.
- [C10] D. Chatterjee, T. Bhattacharya, and **Patari, Niloy**, “Hvdc collection system for offshore wind farm,” in *IECON 2016-42nd Annual Conference of the IEEE Industrial Electronics Society*, IEEE, 2016, pp. 4145–4150.

Working Papers

- [W1] P. Chatterjee, **N. Patari**, and A. K. Srivastava, *Impact of dynamic load-altering attacks on td systems: Insights from centralized and distributed voltage control approaches*, Working for submission to IEEE Transactions on Industry Applications, 2025.
- [W2] **N. Patari**, H. M. Mustafa, S. Basumallik, N. Jasinski, and A. K. Srivastava, *Cognitive analysis of operator decision-making in human-in-the-loop cyber-power systems*, Working for submission to IEEE Transactions on Systems, Man, and Cybernetics, 2025.
- [W3] **N. Patari**, S. M. H. Rizvi, S. Pannala, and A. K. Srivastava, *Aggregated zip load estimation method for der integrated distribution systems*, Working for submission to IEEE Transactions on Power Systems, 2025.
- [W4] **N. Patari** and A. K. Srivastava, *Adaptdist-vc: Adaptive hyperparameters-assisted distributed optimization for voltage control in unbalanced three-phase distribution systems*, Working for submission to IEEE Transactions on Power Systems, 2025.
- [W5] **N. Patari**, A. K. Srivastava, D. K. Molzahn, K. Baker, A. Laszka, and J. Mohammadi, *Machine learning assisted distributed optimization for power systems: Motivation, applications, limitations, and path forward*, Working for submission to IEEE Transactions on Power Systems, 2025.
- [W6] K. Thampanichvong, W. Ongsakul, **N. Patari**, and A. K. Srivastava, *Hierarchical transactive energy framework with d-lmp integrated retail market and distributed p2p local market considering resiliency scenarios*, Working for submission to IEEE Transactions on Energy Markets, Policy and Regulation, 2025.

Submitted Papers

- [S1] **N. Patari** and A. K. Srivastava, *Neighbor-aware adaptive hyperparameter tuning for accelerated distributed optimal voltage control in unbalanced power distribution systems*, Submitted to Power System Computation Conference, 2026.
- [S2] R. Arunkumar, **N. Patari**, and A. K. Srivastava, *ML-assisted hyperparameter tuning for distributed voltage control algorithm in distribution systems*, Working for submission to IEEE Transactions on Industry Applications, 2025.
- [S3] M. Rafy, **N. Patari**, and A. K. Srivastava, *Component-level disaggregation at building meter data using a hybrid classification and block coordinate descent framework*, Working for submission to IEEE Transactions on Power Delivery, 2025.

Tools & Software

Technical Skills

Programming: [R](#), [Python](#).

Engineering Software: [Matlab](#), Matlab-Simulink, LT-Spice, MOSEK, YALMIP, Gurobi, cvx, HyperSim, RSCAD, ArcGIS Pro.

Power System Software: GridLAB-D, OpenDSS, PSS/E, PSCAD/EMTDC, PowerWorld, Synergi, MilSoft.

Data Analytics Software: [Tableau](#).

Other Software: GridTwin.

Presentations

Talks

- [T1] **Niloy Patari** and A. K. Srivastava, *Accelerated distributed optimization for voltage control in power distribution systems*, 2025 IEEE Power & Energy Society General Meeting (PESGM), Aug. 2025.
- [T2] **Niloy Patari**, A. K. Srivastava, G. Qu, and N. Li, *Distributed optimal voltage control for three phase unbalanced distribution systems with ders*, IAS Annual Meeting (Detroit, US), Oct. 2020.
- [T3] S. Pandey, **Niloy Patari**, and A. K. Srivastava, *Cognitive flexibility of power grid operator and decision making in extreme events*, 2019 IEEE Power & Energy Society General Meeting (PESGM), Aug. 2019.

Posters

- [P1] S. Pandey, **Niloy Patari**, and A. K. Srivastava, *Cognitive flexibility of power grid operator and decision making in extreme events*, 2019 IEEE Power & Energy Society General Meeting (PESGM), Aug. 2019.

Teaching

Indian Institute of Technology, Kharagpur

Fall 2015	Teaching Assistant, ELECTRICAL TECHNOLOGY LAB
Spring 2016	Teaching Assistant , ELECTRICAL TECHNOLOGY
Fall 2016	Teaching Assistant, ELECTRICAL TECHNOLOGY LAB
Spring 2017	Teaching Assistant , ELECTRICAL TECHNOLOGY

Washington State University

Fall 2019	Graduate Teaching Assistant, Electrical Circuits Laboratory
Spring 2020	Graduate Teaching Assistant , Electromagnetic Fields and Waves

Academic Advising

Graduate

2024	Krit Thampanichvong, Asian Institute of Technology, Thailand
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Undergraduate

2024	Rohan Arunkumar, Dr. Ronald E. McNair Academic High School, Jersey City, USA
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Academic Service

Reviewer

2025	IEEE PESGM (Austin,TX)
2020	IEEE PESGM (Montreal,CA)
2025	Discover Applied Sciences Springer Nature
2026	IEEE T&D Conference

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