FACULTY VITA

Date: 05/13/2025
Name: Zhaoyu Wang
Department: Electrical and Computer Engineering
Current Rank: Full Professor

I. BACKGROUND, PROFESSIONAL EXPERIENCE AND RECOGNITIONS

A. Education

- Georgia Institute of Technology, Atlanta, Electrical Engineering, Ph.D., July 2015
- Georgia Institute of Technology, Atlanta, Electrical Engineering, M.Sc., May 2012
- Shanghai Jiao Tong University, Shanghai, Electrical Engineering, M.Sc., March 2012
- Shanghai Jiao Tong University, Shanghai, Electrical Engineering, B.Sc., June 2009

B. Academic Appointments

- Full Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, August 2024-present
- Northrop Grumman Endowed Associate Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, September 2021-August 2024
- Associate Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, August 2021-present
- Harpole-Pentair Assistant Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, August 2017-August 2021
- Assistant Professor, Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, August 2015- August 2021

C. Other Professional Employment

- Electrical Engineer Intern, Manufacturing Technology and Engineering Division, Corning Incorporated, May – August, 2014
- Research Aide, Decision and Information Sciences Division, Argonne National Laboratory, May – August, 2013
- Graduate Research Assistant, School of Electrical and Computer Engineering, Georgia Institute of Technology, January 2011 – July 2015

D. Honors and Awards

- **IEEE Power and Energy Society (PES) Distinguished Lecturer, 2025**
- **ISU Award for Mid-Career Achievement in Research, Iowa State University, 2025**

- IEEE Power and Energy Society (PES) Committee Prize Paper Award, IEEE PES, 2025
- IEEE Power and Energy Society (PES) General Meeting Best Paper Award, IEEE PES, 2024
- Participant (by invitation), China-America Frontiers of Engineering Symposium (CAFOE), U.S. National Academy of Engineering, 2024.
- IEEE Power and Energy Society (PES) General Meeting Best Paper Award, IEEE PES, 2023
- The 53rd North American Power Symposium Best Paper Award, 2021
- **Northrop Grumman Endowed Professorship, Iowa State University, 2021**
- **College of Engineering's Early Achievement in Research Award, Iowa State University, 2021**
- **National Science Foundation (NSF) CAREER Award, NSF, 2021**
- **Society-Level Outstanding Young Engineer Award, IEEE Power and Energy Society (PES), 2020**
- IEEE Power and Energy Society (PES) General Meeting Best Paper Award, IEEE PES, 2019
- IEEE Transactions on Power Systems Outstanding Reviewer, IEEE PES, 2018
- **Harpole-Pentair Young Faculty Award Endowment, Iowa State University, 2017**
- IEEE Power and Energy Society (PES) General Meeting Best Paper Award, IEEE PES, 2017
- IEEE Industry Application Society (IAS) Energy Systems Committee Prize Paper Award, IEEE IAS, 2017
- IEEE Transactions on Smart Grid Outstanding Reviewer, IEEE PES, 2015
- Journal of Energy Engineering Outstanding Reviewer Award, American Society of Civil Engineers, 2014

II. SCHOLARSHIP AND RESEARCH/CREATIVE ACTIVITIES

A. Scholarship

+ Denotes individuals working under Wang's supervision.

** Denotes corresponding author.*

1. Articles in Peer-Reviewed Journals – In Print or Accepted

Journal	Number of Papers
IEEE Transactions on Power Systems	49
IEEE Transactions on Smart Grid	44
Other IEEE Transactions/Magazines	12

Works of scholarship occurred at ISU AND after last advancement

[130] T. Li+, A. P. Zhao, Y. Wang, S. Li, J. Fei, **Z. Wang***, and Y. Xiang, "Advancing Sustainable Mobility: Photovoltaic Electric Vehicle Integration into Energy Systems," Nature Reviews Electrical Engineering, accepted for publication.

[129] L. Liu+, Y. Yuan+, **Z. Wang***, Y. Yao, and F. Ding, "Integrated Framework of Multisource Data Fusion for Outage Location in Looped Distribution Systems," IEEE Transactions on Smart Grid, accepted for publication. DOI: 10.1109/TSG.2025.3540979

[128] S. Maharjan+, C. Bai+, H. Wang+, Y. Yao, F. Ding, and **Z. Wang***, "Distribution System Blackstart and Restoration using DERs and Dynamically formed Microgrids," IEEE Transactions on Smart Grid, accepted for publication. DOI: 10.1109/TSG.2025.3536847

[127] Y. Li+, **Z. Wang***, H. Li+, S. Maharjan+, K. Kudart, N. David, D. Ivener, and A. Kimber, "Remote Islanded Microgrid," IEEE Electrification Magazine, accepted for publication. DOI: 10.1109/MELE.2025.3558679

[126] T. Li, J. Liu, A. Thelen, A. Mishra, X. Yang, **Z. Wang**, C. Hu, "Coupling a Capacity Fade Model with Machine Learning for Early Prediction of the Battery Capacity Trajectory", Applied Energy, accepted for publication.

[125] H. Wang+, C. Bai+, **Z. Wang***, and R. Roychowdhury, "Resilient Preparation and Restoration Strategy for Integrated Electric-Gas Distribution Systems Considering Mobile Energy Storage," IEEE Transactions on Smart Grid, vol. 16, no. 2, pp. 1127-1141, March 2025. DOI: 10.1109/TSG.2025.3526778

[124] C. Wang, G. Li, C. Wan, **Z. Wang**, P. Ju, and S. Lei, "Uncertainty-Inflicted Event-Driven Resilient Recovery for Distribution Systems: A Semi-Markov Decision Process Approach," IEEE Transactions on Power Systems, vol. 40, no. 1, pp. 368-380, January 2025. DOI: 10.1109/TPWRS.2024.3386851

[123] A. P. Zhao, S. Li, Z. Li, **Z. Wang**, X. Fei, Z. Hu, M. Alhazmi, X. Yan, C. Wu, S. Lu, Y. Xiang, and D. Xie, "Electric Vehicle Charging Planning: A Complex Systems Perspective," IEEE Transactions on Smart Grid, vol. 16, no. 1, pp. 754-772, January 2025. DOI: 10.1109/TSG.2024.3446859

[122] G. Liu, R. Cheng, W. Liu, Q. Shi, and **Z. Wang**, "Enhancing Resilience of Urban Electric-Road-Metro Interdependent Network Considering Electric Bus Scheduling," IEEE Transactions on Sustainable Energy, vol. 16, no. 1, pp. 654-672, January 2025. DOI: 10.1109/TSTE.2024.3476688

[121] S. Maharjan+, R. Cheng+, and **Z. Wang***, "Generalized Analytical Estimation of Sensitivity Matrices in Unbalanced Distribution Networks," IEEE Transactions on Power Systems, vol. 39, no. 6, pp. 6807-6818, November 2024. DOI: 10.1109/TPWRS.2024.3369615

[120] A. P. Zhao, S. Li, C. Gu, X. Yan, P. Hu, and **Z. Wang**, "Cyber Vulnerabilities of Energy Systems," IEEE Journal of Emerging and Selected Topics in Industrial Electronics, vol. 5, no. 4, pp. 1455-1469, October 2024. DOI: 10.1109/JESTIE.2024.3434350

[119] L. Liu+, Y. Luo+, **Z. Wang***, F. Qiu, S. Zhao, M. Yildirim, and R. Roychowdhury, "Deep Learning-Based Failure Prognostic Model for PV Inverter Using Field Measurements," IEEE Transactions on Sustainable Energy, vol. 15, no. 4, pp. 2789-2802, October 2024. DOI: 10.1109/TSTE.2024.3443234

[118] L. Liu+, S. Shi+, D. Wang+, Z. Ma+, **Z. Wang***, M. Reno, and J. Azzolini, "Voltage Calculations in Secondary Distribution Networks via Physics-Inspired Neural Network Using Smart Meter Data," IEEE Transactions on Smart Grid, vol. 15, no. 5, pp. 5205-5218, September 2024. DOI: 10.1109/TSG.2024.3396434

[117] Z. Ma+, **Z. Wang***, Y. Yuan+, and T. Hong, "Singular Perturbation-based Large-Signal Order Reduction of Microgrids for Stability and Accuracy Synthesis with Control," IEEE Transactions on Smart Grid, vol. 15, no. 4, pp. 3361-3374, July 2024. DOI: 10.1109/TSG.2024.3357481

[116] Z. Ma+, **Z. Wang***, and R. Cheng+, "Analytical Large-Signal Modeling of Inverter-based Microgrids with Koopman Operator Theory for Autonomous Control," IEEE Transactions on Smart Grid, vol. 15, no. 2, pp. 1376-1387, March 2024. DOI: 10.1109/TSG.2023.3314749

[115] N. Shi+, R. Cheng+, L. Liu+, **Z. Wang***, Q. Zhang+, and M. Reno, "Data-Driven Affinely Adjustable Robust Volt/VAr Control," IEEE Transactions on Smart Grid, vol. 15, no. 1, pp. 247-259, January 2024. DOI: 10.1109/TSG.2023.3270112

[114] Y. Yuan+, Y. Wang+, and **Z. Wang***, "A Data-driven Framework for Power System Event Type Identification via Safe Semi-Supervised Techniques," IEEE Transactions on Power Systems, vol. 39, no. 1, pp. 1460-1471, January 2024. DOI: 10.1109/TPWRS.2023.3266153

[113] K. Zhou+, I. Dobson, and **Z. Wang**, "The most frequent N-k line outages occur in motifs that can improve contingency selection," IEEE Transactions on Power Systems, vol. 39, no. 1, pp. 1785-1796, January 2024. DOI: 10.1109/TPWRS.2023.3249825

[112] Q. Zhang+, F. Bu+, Y. Guo, and **Z. Wang***, "Tractable Data Enriched Distributionally Robust Chance-Constrained Conservation Voltage Reduction," IEEE Transactions on Power Systems, vol. 39, no. 1, pp. 821-835, January 2024. DOI: 10.1109/TPWRS.2023.3244895

[111] D. Wang+, Y. Yuan+, R. Cheng+, and **Z. Wang***, "Data-Driven Outage Restoration Time Prediction via Transfer Learning with Cluster Ensembles," IEEE Transactions on Power Systems, vol. 39, no. 1, pp. 83-96, January 2024. DOI: 10.1109/TPWRS.2023.3236513

[110] S. Paul, A. Poudyal, S. Poudel, A. Dubey, and **Z. Wang**, "Resilience assessment and planning in power distribution systems: Past and future considerations," Renewable and Sustainable Energy Reviews, Vol. 189, Part B, January 2024. DOI: doi.org/10.1016/j.rser.2023.113991

[109] Z. Ma+, Q. Zhang+, and **Z. Wang***, "Safe and Stable Secondary Voltage Control of Microgrids based on Explicit Neural Networks," IEEE Transactions on Smart Grid, vol. 14, no. 5, PP. 3375-3387 September 2023. DOI: 10.1109/TSG.2023.3239548 **(IEEE PES Technical Committee Prize Paper Award)**

[108] R. Yan+, Y. Yuan+, **Z. Wang***, G. Geng, and Q. Jiang, "Active Distribution System Synthesis via Unbalanced Graph Generative Adversarial Network," IEEE Transactions on Power Systems, vol. 38, no. 5, PP. 4293-4307, September 2023. DOI: 10.1109/TPWRS.2022.3212029

[107] R. Cheng+, N. Shi+, S. Maharjan+, and **Z. Wang***, "Automatic Self-Adaptive Local Voltage Control Under Limited Reactive Power," IEEE Transactions on Smart Grid, vol. 14, no. 4, pp. 2581-2862, July 2023. DOI: 10.1109/TSG.2022.3224463

[106] **Z. Wang***, A. Borghetti, C. Chen, F. Ding, C. C. Liu, J. Liu, M. Panteli, F. Qiu, and M. Shahidehpour "Guest Editorial Special Section on Sustainable Energy for Enhancing Grid Resiliency," IEEE Transactions on Sustainable Energy, vol. 14, no. 2, PP. 1041-1042, April 2023. DOI: 10.1109/TSTE.2023.3248921

[105] F. Bu+, R. Cheng+, and **Z. Wang***, "A Two-layer Approach for Estimating Behind-the-Meter PV Generation Using Smart Meter Data," IEEE Transactions on Power Systems, vol. 38, no. 1, PP. 885-896, January 2023. DOI: 10.1109/TPWRS.2022.3164010

[104] Y. Yuan+, K. Dehghanpour+, **Z. Wang***, and F. Bu+, "A Joint Distribution System State Estimation Framework via Deep Actor-Critic Learning Method," IEEE Transactions on Power Systems, vol. 38, no. 1, PP. 796-806, January 2023. DOI: 10.1109/TPWRS.2022.3155649

[103] R. Cheng+, L. Tesfatsion, and **Z. Wang**, "A Consensus-Based Transactive Energy Design for Unbalanced Distribution Networks," IEEE Transactions on Power Systems, vol. 38, no. 1, PP. 114-128, January 2023. DOI: 10.1109/TPWRS.2022.3158900

[102] Y. Yuan+, **Z. Wang***, and Y. Wang+, "Learning Latent Interactions for Event Identification via Graph Neural Networks and PMU Data," IEEE Transactions on Power Systems, vol. 38, no. 1, PP. 617-629, January 2023. DOI: 10.1109/TPWRS.2022.3158248

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[97] T. Ding, Z. Wang, M. Qu, **Z. Wang**, and M. Shahidehpour, "A Sequential Black-Start Restoration Model for Resilient Active Distribution Networks," IEEE Transactions on Power Systems, vol. 37, no. 4, PP. 3133-3136, July 2022. DOI: 10.1109/TPWRS.2022.3164589

[96] Y. Guo+, Y. Yuan+, and **Z. Wang***, "Distribution Grid Modeling Using Smart Meter Data," IEEE Transactions on Power Systems, vol. 37, no. 3, PP. 1995-2004, May 2022. DOI: 10.1109/TPWRS.2021.3118004

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[94] Y. Zhang, F. Qiu, T. Hong, **Z. Wang**, and F. Li, "Hybrid Imitation Learning for Real-Time Service Restoration in Resilient Distribution Systems," IEEE Transactions on Industrial Informatics, vol. 18, no. 3, pp. 2089-2099, March 2022. DOI: 10.1109/TII.2021.3078110

[93] Y. Yuan+, K. Dehghanpour+, **Z. Wang***, and F. Bu+, "Multi-Source Data Fusion Outage Location in Distribution Systems via Probabilistic Graphical Models," IEEE Transactions on Smart Grid, vol. 13, no. 2, PP. 1357-1371, March 2022. DOI: 10.1109/TSG.2021.3128752

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[91] A. Arif[+], B. Cui, and **Z. Wang***, "Switching Device-Cognizant Sequential Distribution System Restoration," IEEE Transactions on Power Systems, vol. 1, no. 37, PP. 317-329, January 2022. DOI: 10.1109/TPWRS.2021.3097538

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[87] Z. Ma[+], B. Cui, **Z. Wang***, and D. Zhao, "Parameter Reduction of Composite Load Model Using Active Subspace Method," IEEE Transactions on Power Systems, vol. 36, no. 6, PP. 5441-5452, November 2021. DOI: 10.1109/TPWRS.2021.3078671

[86] F. Bu[+], K. Dehghanpour[+], Y. Yuan[+], **Z. Wang***, and Y. Guo[+], "Disaggregating Customer-level Behind-the-Meter PV Generation Using Smart Meter Data and Solar Exemplars," IEEE Transactions on Power Systems, vol. 36, no. 6, PP. 5417-5427, November 2021. DOI: 10.1109/TPWRS.2021.3074614

[85] Y. Guo[+], Q. Zhang[+], and **Z. Wang***, "Cooperative Peak Shaving and Voltage Regulation in Unbalanced Distribution Feeders," IEEE Transactions on Power Systems, vol. 36, no. 6, PP. 5235-5244, November 2021. DOI: 10.1109/TPWRS.2021.3069781

[84] Y. Yuan[+], Y. Guo[+], K. Dehghanpour[+], **Z. Wang***, and Y. Wang[+], "Learning-Based Real-Time Event Identification Using Rich Real PMU Data," IEEE Transactions on Power Systems, vol. 36, no. 6, PP. 5044-5055, November 2021. DOI: 10.1109/TPWRS.2021.3081608

[83] D. Huo, C. Gu, D. Greewood, **Z. Wang**, P. Zhao, and J. Li, "Chance-Constrained Optimization for Integrated Local Energy Systems Operation considering Correlated Wind Generation," International Journal of Electrical Power and Energy Systems, vol. 132, November 2021, 107153. DOI: 10.1016/j.ijepes.2021.107153

[82] Y. Yuan[+] and **Z. Wang***, "Mining Smart Meter Data to Enhance Distribution Grid Observability for Behind-the-Meter Load Control," IEEE Electrification Magazine, vol. 9, no. 3, pp. 92-103, September 2021. DOI: 10.1109/MELE.2021.3093636

[81] Y. Yuan[+], K. Dehghanpour[+], and **Z. Wang***, "Mitigating Smart Meter Asynchrony Error Via Multi-Objective Low Rank Matrix Recovery," IEEE Transactions on Smart Grid, vol. 12, no. 5, pp. 4308-4317, September 2021. DOI: 10.1109/TSG.2021.3088835

[80] Q. Zhang+, Y. Guo+, **Z. Wang***, and F. Bu+, "Distributed Optimal Conservation Voltage Reduction in Integrated Primary-Secondary Distribution Systems," IEEE Transactions on Smart Grid, vol. 12, no. 5, pp. 3889-3900, September 2021. DOI: 10.1109/TSG.2021.3088010

[79] Q. Zhang+, Z. Ma+, Y. Zhu+, and **Z. Wang***, "A Two-Level Simulation-Assisted Sequential Distribution System Restoration Model With Frequency Dynamics Constraints," IEEE Transactions on Smart Grid, vol. 12, no. 5, pp. 3835-3846, September 2021. DOI: 10.1109/TSG.2021.3088006

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2. Peer-Reviewed Conference Proceedings, Bulletins, or Reports – In Print/Accepted

[48] C. Bai+, S. Maharjan+, **Z. Wang**, Y. Yao, F. Ding, and J. Wang, “Dynamic Microgrids-based Blackstart of Real Utility Feeders Considering Demand Flexibility,” 2025 IEEE PES General Meeting, Austin, July 27-31, 2025. Acceptance rate: 50%

[47] J. Zheng+, H. Wang+, **Z. Wang**, and N. Schulte, “CVR Factor Evaluation Method and Dataset Enrichment for Distribution Systems,” 2025 IEEE PES General Meeting, Austin, July 27-31, 2025. Acceptance rate: 50%

[46] C. Bai+, H. Wang+, **Z. Wang**, and Y. Wang, “Stochastic Optimal Planning of Community-based Microgrid Considering Energy Justice,” 2025 IEEE PES General Meeting, Austin, July 27-31, 2025. Acceptance rate: 50%

[45] D. Wang+, **Z. Wang**, A. Kimber, I. Borel, and M. Neuhaus, “Electric Vehicles Detection and Charging Interval Identification via Feature-Enhanced Ensemble Classification Using Real Utility

Smart Meter Data," 2025 IEEE PES General Meeting, Austin, July 27-31, 2025. Acceptance rate: 50%

[44] H. Li [+], N. Shi[+], and **Z. Wang**, "Distributed Coordination of Demand-side Flexible Resources in Microgrid with All-Time Feasibility," 2025 IEEE PES General Meeting, Austin, July 27-31, 2025. Acceptance rate: 50%

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[42] P. Lama[+], S. Maharjan[+], A. Kimber, and **Z. Wang**, "Evaluating the Impact of EVs and Heat Pumps on Primary-Secondary Distribution Systems Using Real-World Data," 2024 North American Power Symposium, El Paso, October 13-15, 2024. Acceptance rate unavailable.

[41] D. Niraula[+], H. Wang[+], and **Z. Wang**, "Community-Based Microgrid Planning and Operation for Fostering Energy Justice," 2024 North American Power Symposium, El Paso, October 13-15, 2024. Acceptance rate unavailable.

[40] Z. Ma[+], N. Shi[+], **Z. Wang**, and W. Fan, "Time-Varying Conservation Voltage Reduction Evaluation with Ground Truth Validation," 2024 IEEE PES General Meeting, Seattle, July 22-25, 2024. **(Best Paper Award)** Acceptance rate: 50%

[39] D. Wang[+], S. Qiu[+], **Z. Wang**, and A. Kimber, "Micro-PMU Field Deployment and Data Analysis in Utility Distribution Grid with High Penetration of Distributed Energy Resources," 2024 IEEE PES General Meeting, Seattle, July 22-25, 2024. Acceptance rate: 50%

[38] C. Bai[+], H. Wang[+], A. Kimber, P. Lama[+], and **Z. Wang**, "Residential Electric Vehicle Charging Demand Analysis for Distribution Transformer Expansion Planning Considering Dynamic Transformer Rating," 2024 IEEE PES General Meeting, Seattle, July 22-25, 2024. Acceptance rate: 50%

[37] Y. Luo[+], L. Liu[+], Y. Yuan[+], **Z. Wang**, F. Qiu, S. Zhao, and M. Yildirim "Data-Driven Assessment of Operational and Harsh Environmental Stress Factors for Solar Inverters using Field Measurements," 2024 IEEE PES General Meeting, Seattle, July 22-25, 2024. Acceptance rate: 50%

[36] S. Chung, Y. Zhang, **Z. Wang**, and F. Ding, "Taylor-Expansion-Based Robust Power Flow in Unbalanced Distribution Systems: A Hybrid Data-Aided Method," 2024 IEEE PES General Meeting, Seattle, July 22-25, 2024. **(Best Paper Award)** Acceptance rate: 50%

[35] P. Tiwari[+], S. Maharjan[+], P. Lama[+], and **Z. Wang**, "Assessment of Voltage Balancing in Distribution Networks with Utility-scale and Behind-the-Meter PVs Considering Service Transformers," 2023 North American Power Symposium, Asheville, NC, October 15-17, 2023. Acceptance rate unavailable.

[34] L. Liu[+], N. Shi[+], S. Maharjan[+], and **Z. Wang**, "Siamese Convolutional Neural Network-Based Anomaly Detection for Distributed PV Inverter," 2023 IEEE PES General Meeting, Orlando, July 16-20, 2023. Acceptance rate: 50%

[33] S. Maharjan+, P. Tiwari+, R. Cheng+, and **Z. Wang**, "Robust Model Predictive Techno-Economic Control of Active Distribution Networks," 2023 IEEE PES General Meeting, Orlando, July 16-20, 2023. **(Best Paper Award)** Acceptance rate: 50%

[32] N. Shi+, R. Cheng+, Q. Zhang+, and **Z. Wang**, "Analyzing Impact of BESS Allocation on Hosting Capacity in Distribution Networks," 2022 North American Power Symposium, Salt Lake City, October 9-11, 2022. Acceptance rate unavailable.

[31] R. Cheng+, N. Shi+, and **Z. Wang**, "Fast ADMM-Based Hierarchical and Decentralized Volt/VAr Control in Distribution Networks," 2022 IEEE PES General Meeting, Denver, July 17-21, 2022. Acceptance rate: 50%

[30] R. Cheng+, **Z. Wang**, Y. Guo, and F. Bu, "Analyzing Photovoltaics' Impact on Conservation Voltage Reduction in Distribution Networks," 2021 North American Power Symposium, College Station, November 14-16, 2021. Acceptance rate unavailable.

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[28] Y. Guo+ and **Z. Wang**, "On Peak Shaving and Load Shifting in Distribution Systems: Cost Saving vs Peak Load Reduction," 2021 IEEE PES General Meeting, Virtual, July 25-29, 2021. Acceptance rate: 50%

[27] F. Bu+, K. Dehghanpour+, Y. Yuan+, and **Z. Wang**, "Quantifying Load Uncertainty Using Real Smart Meter Data," 2020 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm), Tempe, Arizona, November 11-13, 2020. DOI: 10.1109/SmartGridComm47815.2020.9302994 Acceptance rate unavailable.

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[25] S. Shen, V. Nemani, J. Liu+, C. Hu, and **Z. Wang**, "A Hybrid Machine Learning Model for Battery Cycle Life Prediction with Early Cycle Data," 2020 IEEE Transportation Electrification Conference & Expo, Chicago, Illinois, June 24-26, 2020. DOI: 10.1109/ITEC48692.2020.9161647 Acceptance rate unavailable.

[24] N. Carrington+, S. Ma+, I. Dobson, and **Z. Wang**, "Extracting Resilience Statistics from Utility Data in Distribution Grids," 2020 IEEE PES General Meeting, Montreal, Quebec, Canada, August 2-6, 2020. DOI: 10.1109/PESGM41954.2020.9281596 Acceptance rate: 50%

[23] F. Bu+, Y. Yuan+, **Z. Wang**, K. Dehghanpour+, and A. Kimber, "A Time-series Distribution Test System based on Real Utility Data," 2019 North American Power Symposium, Wichita, October 13-15, 2019. DOI: 10.1109/NAPS46351.2019.8999982 Acceptance rate unavailable.

[22] S. Ma+, A. Arif+, N. Carrington+, and **Z. Wang**, "Resilience Assessment of Self-healing Distribution Systems Under Extreme Weather Events," 2019 IEEE PES General Meeting, Atlanta,

August 4-8, 2019. DOI: 10.1109/PESGM40551.2019.8974122 **(Best Paper Award)** Acceptance rate: 50%

[21] Y. Yuan+, K. Dehghanpour+, F. Bu+, and **Z. Wang**, "A Probabilistic Data-Driven Method for Photovoltaic Pseudo-Measurement Generation in Distribution Systems," 2019 IEEE PES General Meeting, Atlanta, August 4-8, 2019. DOI: 10.1109/PESGM40551.2019.8974026 Acceptance rate: 50%

[20] J. Liu+, C. Hu, and **Z. Wang**, "Co-Optimizing Size and Schedule of Lithium-Ion Battery Combined with PV Generation," 2019 IEEE Transportation Electrification Conference, Novi, Michigan, June 19-21, 2019. Acceptance rate unavailable.

[19] C. Wang+, **Z. Wang**, K. Zhou+, and S. Ma+, "Maintenance Scheduling of Integrated Electric and Natural Gas Grids with Wind Energy Integration," 2018 IEEE PES General Meeting, Portland, August 5-10, 2018. DOI: 10.1109/PESGM.2018.8586553 Acceptance rate: 50%

[17] S. Ma+, S. Li, **Z. Wang**, A. Arif+, and K. Ma, "A Novel MILP Formulation for Fault Isolation and Network Reconfiguration in Active Distribution Systems," 2018 IEEE PES General Meeting, Portland, August 5-10, 2018. DOI: 10.1109/PESGM.2018.8585927 Acceptance rate: 50%

[18] N. David+ and **Z. Wang**, "Rotor-Tied Configuration of DFIG Wind Turbines for Improving Reactive Power Support Capability," 2018 IEEE PES General Meeting, Portland, August 5-10, 2018. DOI: 10.1109/PESGM.2018.8586059 Acceptance rate: 50%

[16] K. Zhou+, I. Dobson, P. Hines, and **Z. Wang**, "Can an influence graph driven by outage data determine transmission line upgrades that mitigate cascading blackouts?" 2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), Boise, Idaho, June 24- 28, 2018. DOI: 10.1109/PMAPS.2018.8440497 Acceptance rate unavailable.

[15] A. Arif+ and **Z. Wang**, "Distribution Network Outage Data Analysis and Repair Time Prediction Using Deep Learning," 2018 IEEE International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), Boise, Idaho, June 24-28, 2018. DOI: 10.1109/PMAPS.2018.8440354 Acceptance rate unavailable.

[14] C. Wang+, **Z. Wang**, and S. Ma+, "SVM-Based Parameter Identification for Static Load Modeling, 2018 IEEE PES T&D Conference & Exposition, Denver, CO, April 16-19, 2018. DOI: 10.1109/TDC.2018.8440334 Acceptance rate unavailable.

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[12] I. Dobson, K. Zhou+, N. Carrington+, **Z. Wang**, B. Carreras and J. Reynolds-Barredo, "Exploring Cascading Outages and Weather via Processing Historic Data," The 51th Hawaii International Conference on System Sciences, Big Island, Hawaii, January 2018. Acceptance rate unavailable.

[11] S. Madani, **Z. Wang** and V. Ajjarapu, "Participation Factor Based CVR for Enhanced Voltage Stability Using Integrated Transmission and Distribution Systems," The 49the North American

Power Symposium, Morgantown, WV, September 17-19, 2017. DOI: 10.1109/NAPS.2017.8107298 Acceptance rate unavailable.

[10] A. Bharati, S. Ankit, V. Ajjarapu, and **Z. Wang**, "Comparison of CVR Impact on Transmission System Load Margin with Aggregated and De-Aggregated Distribution System," The 49the North American Power Symposium, Morgantown, WV, September 17-19, 2017. DOI: 10.1109/NAPS.2017.8107284 Acceptance rate unavailable.

[9] N. David+ and **Z. Wang**, "Physical rotor inertia of DFIG wind turbines for short-term frequency regulation in low-inertia grids," 2017 IEEE PES General Meeting, Chicago, July 16-20, 2017. DOI: 10.1109/PESGM.2017.8273999 Acceptance rate: 50%

[8] A. Arif+, S. Ma+, and **Z. Wang**, "Online Decomposed Optimal Outage Management after Natural Disasters," 2017 IEEE PES General Meeting, Chicago, July 16-20, 2017. DOI: 10.1109/PESGM.2017.8273780 Acceptance rate: 50%

[7] C. Wang+ and **Z. Wang**, "Short-Term Transmission Line Maintenance Scheduling with Wind Energy Integration," 2017 IEEE PES General Meeting, Chicago, July 16-20, 2017. DOI: 10.1109/PESGM.2017.8274097 **(Best Paper Award)** Acceptance rate: 50%

[6] T. Lu, **Z. Wang**, Q. Ai, and W. Lee, "Interactive model for energy management of clustered microgrids," 2016 IEEE Industry Applications Society Annual Meeting, Portland, October 2-6, 2016. DOI: 10.1109/TIA.2017.2657628 Acceptance rate: 50%

[5] A. Arif+, S. Ma+, and **Z. Wang**, "Optimization of Transmission System Repair and Restoration with Crew Routing," 2016 North American Power Symposium, Denver, September 18-20, 2016. DOI: 10.1109/NAPS.2016.7747949 Acceptance rate unavailable.

[4] **Z. Wang**, "Decentralized Voltage/VAR Control based on PV Inverters," 2016 IEEE PES Innovative Smart Grid Technologies Conference, Minneapolis, September 6-9, 2016. DOI: 10.1109/ISGT.2016.7781183 Acceptance rate unavailable.

[3] **Z. Wang**, "Assessment of Conservation Voltage Reduction by Unscented Kalman Filter based Load Modeling," 2016 IEEE PES General Meeting, Boston, July 17-21, 2016. DOI: 10.1109/PESGM.2016.7741549 Acceptance rate: 50%

[2] A. Arif+ and **Z. Wang**, "Service Restoration in Resilient Power Distribution Systems with Networked Microgrids," 2016 IEEE PES General Meeting, Boston, July 17-21, 2016. DOI: 10.1109/PESGM.2016.7741533 Acceptance rate: 50%

[1] **Z. Wang#**, Q. Ai, D. Xie, and C. Jiang, "A research on shading and LCOE of building integrated photovoltaic," 2011 Asia-Pacific Power and Energy Engineering Conference (APPEEC), Wuhan, China, March 25-28, 2011. DOI: 10.1109/APPEEC.2011.5747745 Acceptance rate unavailable.

3. Formally Invited Seminars and Presentations

Venues	Number of Talks
Talks at Technical Society Events	70
Talks at Universities/National Labs	23

Talks at Power Industry	23

[116] Dynamic Operating Envelopes for Flexible Management of Distributed Energy Resources, INFORMS Annual Meeting (Atlanta, GA), Panel: Robust Operations and Management in Energy Systems, October 27, 2025.

[115] Optimizing Dynamic Operating Envelopes for Flexible DER Integration and Service Provision, 2025 IEEE Power and Energy Society General Meeting (Austin, TX), Panel: Grid Service Provision and Market Integration of Distributed Energy Resources, July 31, 2025.

[114] Leveraging DERs and Networked Microgrids to Enhance Distribution Grid Resilience, 2025 IEEE Power and Energy Society General Meeting (Austin, TX), Panel: Unleashing DER Flexibility for Enhancing Grid Reliability, Efficiency, and Resilience, July 30, 2025.

[113] Introduction to IEEE Standard P3102 Conservation Voltage Reduction (CVR) Data Collection and Management Procedures, 2025 IEEE Power and Energy Society General Meeting (Austin, TX), Panel: Powering the Future: Smart Grid Solutions for Electrification and Capacity Challenges, July 29, 2025.

[112] Big Data Analytics in Distribution Grids: Conservation Voltage Reduction Assessment, Data-Driven Resilience Quantification, and Model-Free Hosting Capacity Analysis, AES Indiana, Indianapolis, March 27, 2025.

[111] Dynamic Operating Envelopes for Distributed Energy Resources: Model-based Optimization vs. AI-driven Method, AspenTech Academy Meeting, March 20, 2025.

[110] Blackstart Distribution Grids using Battery Energy Storage Systems and other DERs, 2025 IEEE Power and Energy Society Grid Edge Technologies Conference & Exposition (San Diego, CA), Panel: Use of Distribution Battery Energy Storage Systems for Microgrids and other Grid Edge Services - Real World Considerations & Applications, January 21, 2025.

[109] Big Data Analytics in Distribution Grids: Hosting Capacity Analysis, EV Detection, and Conservation Voltage Reduction Assessment, IEEE Big Data Webinar Series, December 19, 2024.

[108] Resilience Enhancement of Power Distribution Systems in Response to Hurricanes, PSERC-EPRI Climate Resilience Workshop, Houston, December 20, 2024.

[107] Modernizing Power Distribution Grids: Challenges, Trends, and AI Solutions, AspenTech Tech Summit 2024, Houston, November 19, 2024.

[106] Big Data Analytics in Distribution Grids: Conservation Voltage Reduction, Heat Pump/EV Detection, and Cold Load Pickup, Webinar to Oncor, November 15, 2024.

[105] Building the First Renewable Microgrid in Rural Iowa to Enhance Resilience and Reliability, 50th Annual Conference of The IEEE Industrial Electronics Society (IECON) (Chicago, IL), Panel: Resilience Enhancement for a Highly Decarbonized Power Grid, November 4, 2024.

[104] Blackstart Power Distribution Grids using DERs and Dynamically Formed Microgrids, PSERC Webinar, October 30, 2024.

[103] Blackstart Power Distribution Systems using DERs and Dynamically Formed Networked Microgrids, Aspen Academy Video Conference, September 26, 2024.

[102] Blackstart Power Distribution Grids using Distributed Energy Resources, INFORMS Annual Meeting (Seattle, WA), Panel: Optimization and Analytics for Grid Reliability and Resilience, October 21, 2024.

[101] TechTalk: PV System Reliability and Asset Management with U.S. Department of Energy, RE+ 2024, Anaheim, CA, September 12, 2024.

[100] Blackstart Power Distribution Grids using Distributed Energy Resources, Carnegie Mellon Electricity Industry Center, September 11, 2024.

[99] Building the First Renewable Community Microgrid in Rural Iowa, 2024 IEEE Power and Energy Society General Meeting (Seattle, WA), Panel: Data Analytics and Machine Learning for Advanced Modeling and Operation of Modern Distribution Grids and Microgrids, July 25, 2024.

[98] Data-Driven Blackstart Power Distribution Systems using DERs, 2024 IEEE Power and Energy Society General Meeting (Seattle, WA), Panel: Realizable machine learning in resilient power grids: from lab developments to industrial applications, July 24, 2024.

[97] Grid-Edge Technologies to Enhance Distribution Grid Modeling and Operation, 2024 IEEE Power and Energy Society General Meeting (Seattle, WA), Panel: Industry Experiences with Grid Edge Technologies Deployment: Trends, Challenges, and Strategies, July 23, 2024.

[96] Conservation Voltage Reduction and Voltage Optimization: From Basics to Utility Practices, 2024 IEEE Power and Energy Society General Meeting (Seattle, WA), Tutorial: Power System T&D Planning & Operations–Transformations Through DER Integration, PMU Data Analytics, and Edge Device Interoperability, July 21, 2024.

[95] Modeling and Operation of Power Distribution Grids using Real Utility Data and Artificial Intelligence, Mini-Symposium: Applications of AI for Exploring Community Systems Transition to Clean Energy, 2024 SIAM Conference on the Mathematics of Planet Earth (Portland, OR), June 10, 2024.

[94] Data-Driven Distribution Grid Modeling and Operation, Eaton, July 16, 2024

[93] Leveraging Data to Enhance Power Distribution Grid Modeling and Operation, Distinguished Webinar, Center for Cyber Security Research, North Dakota State University, May 30, 2024.

[92] Blackstart Distribution Grids using DERs, 2024 IEEE PES T&D Conference & Exposition (Anaheim, CA), Panel: Data Orchestration and Autonomous Restoration to Enhance Community Resilience, May 9, 2024.

[91] Field Deployment of Synchrophasor Measurement Units and Data Analytics in Iowa Distribution Grids, 2024 IEEE PES T&D Conference & Exposition (Anaheim, CA), Panel: Synchrophasor Monitoring Applications in IBR-rich Distribution Grids, May 8, 2024.

[90] Leveraging Smart Meter Data to Improve Distribution Grid Modeling and Operation, 2024 IEEE PES T&D Conference & Exposition (Anaheim, CA), Panel: Leveraging Big Data to Improve Distribution Grid Modeling and Operation, May 8, 2024.

[89] Using DERs to Improve Distribution Grid Operations and Services, 2024 IEEE PES T&D Conference & Exposition (Anaheim, CA), Panel: Future of Distribution Planning Studies with DER Aggregation and FERC 2222 and How it will Impact the Future of Transmission Studies, May 7, 2024.

[88] Tutorial on Conservation Voltage Reduction and Voltage Optimization with DERs: From Basics to Utility Practices, 2024 IEEE Innovative Smart Grid Technologies, North America (ISGT NA 2024) (Washington DC), February 19, 2024.

[87] Conservation Voltage Reduction: Measurement & Verification, AES US Utilities, February 9, 2024.

[86] Enhancing Power Distribution Grid Modeling and Operation using Real Utility Data, Xi'an Jiao Tong University, December 13, 2023.

[85] Data-Driven Distribution Grid Modeling and Operation, 2023 IEEE PES Innovative Smart Grid Technologies Latin America (San Juan, PR), Panel: Automated Distribution Systems – Technologies, Trend, Need and Challenges, November 8, 2023.

[84] OpenDSS for Student Training, EPRI OpenDSS Webinar, September 27, 2023.

[83] Leveraging Smart Meter Data to Enhance Distribution Grid Modeling and Operation, Workshop on Distribution and Transmission System Monitoring, Northeastern University, September 22, 2023.

[82] Big Data Analytics for Enhancing Distribution Grid Modeling and Resilience, 2023 IEEE Power and Energy Society General Meeting (Orlando, FL), Panel: Big Data for Enhanced Grid Performance with Considerations of Data Barriers and Privacy, July 18, 2023

[81] Data-Driven Modeling and Assessment of Outage and Resilience in Distribution Grids, 2023 IEEE Power and Energy Society General Meeting (Orlando, FL), Panel: Exploring Feasibility of Machine Learning for Grid Resilience Assessment, July 18, 2023

[80] Tutorial on Voltage Optimization: Methodologies, Implementations, and Industry Practices, 2023 IEEE Power and Energy Society General Meeting (Orlando, FL), July 16, 2023.

[79] Creating Ground Truth for Validation of CVR Assessment, Commonwealth Edison, May 19, 2023.

[78] Tutorial on Reliable and Cost-Effective Solar System Operations and Maintenance, IEEE PES Grid Edge Technologies Conference & Exposition (San Diego, CA), April 10, 2023.

[77] Energy Savings via Conservation Voltage Reduction: Measurement and Verification Methodologies and Field Results, University of Washington Clean Energy Institute Seminar, February 9, 2023.

[76] Conservation Voltage Reduction Measurement and Verification Methodologies and Field Results, Southeast University, November 26, 2022.

[75] Switching Device-Cognizant Optimal Sequential Distribution System Restoration with DERs, INFORMS Annual Meeting (Indianapolis, IN), Session: Optimization for Improving Power System Resilience, October 18, 2022.

[74] Rural Utilities and Power Systems in Iowa, 2022 NSF Workshop on Connecting Rural and Urban Environments for Equitable Access to Transportation, Telecommunications and Energy (CREEATTE), University of Tennessee, August 18, 2022.

[73] Multi-Source Data Driven Outage Detection in Distribution Systems for Decision Support using Probabilistic Graphical Models, 2022 IEEE Power and Energy Society General Meeting (Denver, CO), Panel: Situational Awareness and Decision Support for Power Grid Operators during Extreme Events, July 21, 2022.

[72] CVR Assessment Methodologies & Field Results, 2022 IEEE Power and Energy Society General Meeting (Denver, CO), Panel: Conservation Voltage Reduction: Challenges and Opportunities in Data Collection and Analytics from a Utility Perspective, July 21, 2022.

[71] A Real and Open Dataset for Machine Learning-based Modeling and Monitoring of Power Distribution Systems, 2022 IEEE Power and Energy Society General Meeting (Denver, CO), Panel: Testbed and Dataset for Machine Learning Applications in Power Systems, July 21, 2022.

[70] Distribution Grid Service Restoration with DERs Considering Dynamics Constraints, 2022 IEEE Power and Energy Society General Meeting (Denver, CO), Super Session: Extreme Events and Their Impacts on Power Systems, July 19, 2022.

[69] Data-Driven Outage Modelling and Restoration Time Prediction in Distribution Grids, 2022 IEEE Power and Energy Society General Meeting (Denver, CO), Panel: Big Data and AI Applications for Enhanced Power Grid Security and Reliability, July 19, 2022.

[68] A Python-PSSE based tool to identify composite model parameters, WECC Modeling and Validation Subcommittee Meeting (virtual), November 30, 2021.

[67] Learning Smart Meter Data for Distribution Grid Modeling and Observability Enhancement, Webinar to Chongqing University, China (virtual), November 30, 2021.

[66] Mining Smart Meter Data to Enhance Distribution Grid Observability for Behind-the-Meter Load Control, Behind the Meter-Distributed Load Control Strategies: September 2021 issue of IEEE Electrification Magazine Webinar, September 22, 2021.

[65] Python-PSSE based WECC composite load identification tool, NERC Load Modeling Working Group Meeting, July 27, 2021.

[64] Using Smart Meters to Enable Active Distribution Grid Management, 2021 IEEE Power and Energy Society General Meeting (virtual), Panel: DER-enabled and Sensor-enabled Active Distribution System Management, July 26, 2021.

[63] Deep Graph Learning of PMU Data for Real-Time Event Identification, 2021 IEEE Power and Energy Society General Meeting (virtual), Panel: Big Data Analysis of Synchrophasor Data: Experience from the U.S., July 26, 2021.

[62] Smart Meter Data-Driven Enhancement of Behind-the-Meter Observability, 2021 IEEE Power and Energy Society General Meeting (virtual), Panel: Challenges and opportunities in observability and state estimation of distribution networks with high penetration of behind-the-meter (BTM) resources, July 26, 2021.

[61] Data-driven Outage management and restoration, 2021 IEEE Power and Energy Society General Meeting (virtual), Panel: Distribution Systems Operations in the age of Big Data, July 26, 2021.

[60] Mitigate grid resilience issues due to natural disasters by transformative distribution infrastructure: DERs, Microgrids, and Electrification, 2021 IEEE Power and Energy Society General Meeting (virtual), Panel: Natural Disaster Mitigation: Best Practices, July 26, 2021.

[59] Field Implementation of MicroPMU and Deep Graph Learning for Real-Time Event Identification, IEEE 2021 International Conference on Smart Grid Synchronized Measurements and Analytics – SGSMA 2021 (virtual), Tutorial: Distribution-Level PMUs and their Applications, May 24, 2021.

[58] WECC Composite Load Model Identification using Python-PSSE, Webinar to American Electric Power, May 18, 2021.

[57] Distribution Grid Modelling using Smart Meter Data, Webinar to University of Wisconsin Madison, March 26, 2021.

[56] Power Distribution Grid Resilience: Outage Data Analytics, System Hardening, and Event Preparation, Webinar to Commonwealth Edison (ComEd), February 26, 2021.

[55] Mining Smart Meter Data to Enhance Distribution System Observability, 2021 IEEE Innovative Smart Grid Technology Conference (ISGT 2021), Panel: Grid Edge Measurements to Improve Distribution System Modeling and Analysis, February 18, 2021.

[54] Mining Outage Data to Enhance Power Distribution Grid Resilience, 2021 IEEE Innovative Smart Grid Technology Conference (ISGT 2021), Panel: Artificial Intelligence/Machine Learning (AI/ML) for Power System Resilience, February 16, 2021.

[53] Power Distribution Grid Resilience: Outage Data Analytics and Optimal Service Restoration, Webinar of the joint Northern Virginia/Washington PES Chapter, in cooperation with the Industrial Application Societies of Northern Virginia, January 15, 2021

[52] What We Can Learn from Smart Meter Data, 2020 INFORMS Annual Meeting, Panel: Machine Learning for Energy Systems, November 11, 2020.

[51] Quantifying Load Uncertainty Using Real Smart Meter Data, 2020 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm), Workshop on Machine Learning and Big Data Analytics in Power Transmission Systems, November 11, 2020.

[50] Smart Meter Data Mining for Peak Load Analysis and Outage Detection, American Public Power Association (APPA) Customer Connections Conference, Session: Mining Your AMI Data for Energy Planning and Customer Service, October 27, 2020.

[49] Smart Meter Data Mining for Peak Load Analysis and Outage Detection in Distribution Systems, Power Systems Engineering Research Center (PSERC) Webinar, October 13, 2020.

[48] What can be learned from smart meter data to improve distribution system operation? 2020 IEEE Power and Energy Society General Meeting (virtual), Super Session: Big Data and Machine Learning Applications in Power Systems, August 6, 2020.

[47] Dynamic Load Restoration using Networked Microgrid Formation, 2020 IEEE Power and Energy Society General Meeting (virtual), Panel: Integration and Operation of Networked Microgrids for Resilient Distribution Grid, August 6, 2020

[46] Optimal Pre-event Preparation and Post-Event Recovery in Power Distribution Grids, and Statistical Metrics in Quantifying Resilience Using Real Data, 2020 IEEE Power and Energy Society General Meeting (virtual), Panel: Natural Disaster Mitigation: Best Practices, Methods and Resilience Metrics, August 6, 2020

[45] A Tool for Mining AMI Data to Model Customer Loads for Small Public Power Utilities, American Public Power Association Business Intelligence & Data Analytics Workshop, Arlington, VA, May 20, 2020.

[44] Outage Detection in Partially Observable Distribution Systems using Smart Meters and Generative Adversarial Networks, 2020 IEEE Power and Energy Society T&D Conference (Chicago, IL), Panel: Artificial Intelligence/Machine Learning (AI/ML) for Power System Resilience, April 20, 2020.

[43] What Can We Learn from Smart Meter Data, Webinar to Washington State University (Pullman, WA), April 14, 2020.

[42] Mining Utility Data for Improving Power System Operation and Resilience, 2020 IEEE Power and Energy Society T&D Conference (Chicago, IL), Panel: Grid Edge Measurements to Improve Distribution System Modeling and Analysis, April 20, 2020.

[41] Enhancing Distribution Grid Observability and Resilience using Real Data, 2020 IEEE Power and Energy Society T&D Conference (Chicago, IL), Panel: Mining Utility Data for Improving Power System Operation and Resilience, April 20, 2020.

[40] Constrained Learning-Based Energy Management of Networked Microgrids, 2020 IEEE Power and Energy Society T&D Conference (Chicago, IL), Panel: Advanced Distribution Management Systems for Intelligence, Efficiency and Resilience, April 20, 2020.

[39] Mining Smart Meter Data for Improving Distribution Grid Observability, University of Michigan (Ann Arbor, MI), March 19, 2020.

[38] Learning Smart Meter Data for Enhancing Distribution Grid Observability, 2020 IEEE Innovative Smart Grid Technology Conference (ISGT 2020) (Washington DC), Panel: Machine Learning-based Decision Making for Power System Operation, February 20, 2020.

[37] Learning-based Optimal Operation of Networked Microgrids, 2020 IEEE Innovative Smart Grid Technology Conference (ISGT 2020) (Washington DC), Panel: Multi-timescale operation and optimization of power grid with high renewable penetrations, February 18, 2020.

[36] Data-Driven Resilience Modeling in Distribution Grids, 2020 IEEE Innovative Smart Grid Technology Conference (ISGT 2020) (Washington DC), Panel: Definition, Planning and Operations of Resilient Electric Grids, February 18, 2020.

[35] Machine Learning for Distribution Grid Data Analytics and Management, Pacific Northwest National Laboratory (Richland, Washington), January 24, 2020.

[34] Mining Smart Meter Data for Improving Distribution Grid Observability Eaton Corporate Research and Technology (Golden, CO), January 17, 2020.

[33] Mining Real Utility Data for Enhancing Distribution Grid Observability and Resilience, The University of Denver (Denver, Colorado), November 14, 2019.

[32] Mining Smart Meter Data for Improving Distribution Grid Operation and Resilience, IEEE Big Data Webinar Series, November 11, 2019.

[31] Mining Real Utility Data for Enhancing Distribution Grid Observability and Resilience, West Virginia University (Morgantown, West Virginia), November 4, 2019.

[30] Mining Utility Data for Enhancing Distribution Grid Observability and Resilience, INFORMS Annual Meeting (Seattle, WA), Panel: Data Mining in Power Systems, October 21, 2019.

[29] Data Mining in Distribution Grids, 14th INFORMS Workshop on Data Mining and Decision Analytics (Seattle, WA), October 19, 2019.

[28] Data Analytics and Optimization for Enhancing Grid Resilience Against Extreme Weather Events, 2019 IEEE Power and Energy Society General Meeting (Atlanta, GA), Panel: Data-Driven Approaches for Mitigation of Natural Disasters Impacts on Power Grids, August 6, 2019.

[27] Analyzing Utility Smart Meter Data for Load Modeling in Distribution Systems, 2019 IEEE Power and Energy Society General Meeting (Atlanta, GA), Panel: Power Systems Load Modeling: Opportunities, Challenges and Methodologies, August 6, 2019.

[26] Dynamic Order Reduction of Composite Load Models, 2019 IEEE Power and Energy Society General Meeting (Atlanta, GA), Panel: Transient Modeling and Analysis of Distribution Systems, August 6, 2019.

[25] Robust Real-Time Modeling of Distribution Systems with Data-Driven Grid-Wise Observability, 2019 Department of Energy Advanced Grid Modeling Peer Review Meeting, Argonne National Laboratory, July 18, 2019.

[24] Smarter Grids for Better Response to Natural Disasters, 2019 Institute of Industrial and Systems Engineers Annual Conference & Expo (Orlando, Florida), Panel: Power Systems and Microgrids, May 20, 2019.

[23] Mathematical Representation and Dynamic Order Reduction of WECC Composite Load Model, Western Electricity Coordinating Council (Salt Lake City, Utah), April 3, 2019.

[22] Mining Utility Data for Enhancing Distribution Grid Observability and Resilience, Pacific Northwest National Laboratory Webinar (Richland, Washington), February 28, 2019.

[21] Data-driven Resilience Modeling and Enhancement, 2019 IEEE Innovative Smart Grid Technology Conference (ISGT 2019) (Washington DC), Panel: National Power Grid Resilience Modeling, February 20, 2019.

[20] Mathematical Representation of WECC Composite Load model, 2019 IEEE Innovative Smart Grid Technology Conference (ISGT 2019) (Washington DC), Panel: Distribution System Hierarchical Load Modeling: Needs, Trends and Methodologies, February 19, 2019.

[19] Data-Driven and Machine Learning-based Power Distribution Grid Operation, 2019 IEEE Innovative Smart Grid Technology Conference (ISGT 2019) (Washington DC), Panel: Artificial Intelligence in Power System Operations and Planning, February 18, 2019.

[18] Analyzing Utility Outage Data for Resilience Enhancement, 2019 IEEE Innovative Smart Grid Technology Conference (ISGT 2019) (Washington DC), Panel: Data Analytics for Grid Resilience Modeling and Enhancement Planning, February 18, 2019.

[17] Tutorial: Power System Resilience: Fundamentals, Analytical and Planning Tools, and Industry Practices, 2019 IEEE Innovative Smart Grid Technology Conference (ISGT 2019) (Washington DC), February 17, 2019

[16] Mathematical Modeling of WECC Composite Load Models, GEIRI North America (San Jose, CA), December 4, 2018.

[15] Resilient Power Distribution Grids From Planning To Restoration, INFORMS Annual Meeting (Phoenix, AZ), Panel: Enhance Energy Infrastructure Resilience with Operations Research, November 20, 2018.

[14] Data Analytics in Power Distribution System, Siemens Cooperate Technologies Webinar (Princeton, NJ), August 30, 2018.

[13] Power Transmission and Distribution Networks Management in Normal and Emergency Operations, 2018 IEEE Power and Energy Society General Meeting (Portland, OR), Panel: Optimization Algorithms for Integration of Power Transmission and Distributed Networks Management, August 9, 2018.

[12] Real-Time Modeling and Control of Distribution Systems with Smart Meter Data, 2018 IEEE Power and Energy Society General Meeting (Portland, OR), Panel: Security and Analysis of Data from Smart Meters for Adopting in Distribution System State Estimation, August 8, 2018.

[11] Flexible Service Contracting for Risk Management within Integrated Transmission and Distribution Systems, DOE Transmission Reliability and Markets Program Meeting (Washington DC), June 5, 2018.

[10] Agent-Based Modeling for Integrated Transmission and Distribution Test Systems, 2018 IEEE Power and Energy Society T&D Conference (Denver, CO), Panel: Distributed Computing and Multi-Agent Systems Applications in Smart Grid, April 17, 2018.

[9] Optimal Repair and Restoration in Resilient Distribution Grids, 2018 IEEE Power and Energy Society T&D Conference (Denver, CO), Panel: Building a More Resilient Distribution System against Extreme Events in Smart Grid, April 18, 2018.

[8] Integrated Transmission and Distribution System Test Bed, University of Bath (Bath, UK), January 15, 2018.

[7] Data-Driven Outage Management of Power Distribution Systems, Shandong University (Jinan, China), December 27, 2017.

[6] Data-Driven Outage Management of Power Distribution Systems, Beijing University of Posts and Telecommunications (Beijing, China), December 20, 2017.

[5] Integrated Wholesale and Retail Power System Test Beds, Springfield City Utilities (Springfield, MO), October 19, 2017.

[4] Optimizing Service Restoration in Resilient Distribution Systems, Virginia Commonwealth University (Richmond, VA), September 6, 2017.

[3] Power Distribution Grid Resilience: Design and Operation, 2017 IEEE Innovative Smart Grid Technology Conference (ISGT 2017) (Washington DC), Panel: Grid Edge Resilience and Control Technologies with Microgrids and Self-Healing Functions, April 24, 2017.

[2] Resilience-Oriented Design for Electric Power Distribution Systems to Protect Against Extreme Weather Events, University of Iowa (Iowa City, IA), April 7, 2016.

[1] Resilient Power Distribution Systems in Extreme Weather Events: Design and Operation, Ameren (Saint Louis, MO), April 29, 2016.

4. Other Scholarly Contributions

[5] **Z. Wang** and K. Dehghanpour, Networked Microgrids for Enhancing Grid Resiliency, IEEE Smart Grid Newsletters, March 2020.

[4] **Z. Wang**, How Artificial Intelligence and Advanced Optimization Help Improve Outage Management, IEEE Smart Grid Newsletters, September 2019.

[3] **Z. Wang**, Smarter Grids with Richer Data for Better Response to Natural Disasters, IEEE Smart Grid Newsletters, February 2019.

[2] **Z. Wang**, Keeping the lights on during extreme cold snaps takes investments and upgrades, The Conversation, January 2019.

[1] J. Wang and **Z. Wang**, "Conservation Voltage Reduction: Implementation and Assessment," IEEE Smart Grid Newsletter, May 2014.

B. Funded Grants and Contracts

Total number of grant/contracts as PI	**32**
Total number of grant/contracts as Co-PI	**9**
Total dollar amount of grant/contracts as PI	**$24,379,096**
Total dollar amount of grant/contracts as Co-PI	**$2,177,326**
Total dollar amount allocated to Z. Wang	**$15,887,106**

Z. Wang (Lead PI), A. Kimber (ISU), B. Cui (ISU), X. Wu (AES), D. Schnitzer (SparkMeter), and R. Yang (NREL), "Data-Driven Automated and Proactive Asset Management to Enhance Reliability and Resilience of Rural Distribution Grids," The U.S. Department of Energy, under award negotiation. Total federal dollar amount: $1,000,000, dollar amount allocated to Z. Wang: $500,000

Z. Wang (Lead PI), A. Kimber (ISU), and K. Kudart (Montezuma Municipal Light and Power), "Montezuma Microgrid," The U.S. Department of Energy, under award negotiation. Total federal dollar amount: $9,480,000, dollar amount allocated to Z. Wang: $4,740,000

Z. Wang (Single PI), "Scalability Testing of Distributed Voltage Controller with Peer to Peer Communication in a Power Distribution Grid," EATON Cooperation, October 1, 2024 to September 30, 2025. Total federal dollar amount: $160,000, dollar amount allocated to Z. Wang: $160,000

Z. Wang (Lead PI), B. Cui (ISU), X. Wu (AES), R. Roychowdhury (AES), F. Ding (NREL), F. Qiu (ANL), B. Yang (Hitachi), and X. Wu (Siemens), "Modernizing Operation and Decision-Making Tools Enabling Resource Management In Stochastic Environment (MODERNISE)," The U.S. Department of Energy, October 1, 2024 to March 31, 2028. Total federal dollar amount: $3,102,147, dollar amount allocated to Z. Wang: $1,551,073

Z. Wang (Lead PI), A. Kimber (ISU), I. Dobson (ISU), F. Qiu (Argonne National Lab), V. Koritarov (Argonne National Lab), X. Wu (AES), and R. Roychowdhury (AES), "Resilience Evaluation and Enhancement of Charging Stations with Hierarchical Adaptive Restoration of Grids and Distributed Energy Resources (RECHARGE)," The U.S. Department of Energy, September 1, 2024 to August 31, 2026. Total federal dollar amount: $1,199,997, dollar amount allocated to Z. Wang: $479,997

Z. Wang (ISU Single PI), "Demonstrate a Community-Oriented Interoperable Control Framework Aggregating and Integrating DERs and Other Grid-edge Devices," The U.S. Department of Energy – Subcontract from ComEd, under award negotiation. Total federal dollar amount: $800,000, dollar amount allocated to Z. Wang: $800,000

Z. Wang (ISU Lead PI), and A. Kimber (ISU) "Optimal Energy Storage Planning and Techno-economic Assessment for Rural Utilities," The U.S. Department of Energy – Subcontract from Pacific Northwest National Laboratory, October 17, 2023 to October 31, 2024. Total federal dollar amount: $80,000, dollar amount allocated to Z. Wang: $48,000

Z. Wang (ISU Single PI), "Solar-Assisted, Stakeholder-Engaged, Autonomous Restoration with Data Orchestration (Solar-HERO)," The U.S. Department of Energy – Subcontract from National Renewable Energy Laboratory, April 1, 2023 to March 31, 2026. Total federal dollar amount: $340,000, dollar amount allocated to Z. Wang: $340,000

Z. Wang (ISU Single PI), "Smart Meter Data: A Gateway for Reducing Solar Soft Costs with Model-Free Hosting Capacity Maps," The U.S. Department of Energy – Subcontract from Sandia

National Laboratory, January 1, 2023 to December 31, 2024. Total federal dollar amount: $220,000, dollar amount allocated to Z. Wang: $220,000

Z. Wang (ISU Single PI), "Solar-Leap: A Democratized Tool to Manage Long-Term Impact of Environmental and Operational Stressors on Asset Performance Degradation," The U.S. Department of Energy – Subcontract from Argonne National Laboratory, December 16, 2022 to March 31, 2024. Total federal dollar amount: $60,000, dollar amount allocated to Z. Wang: $60,000

Z. Wang (ISU Lead PI), and A. Kimber (ISU) "Harnessing Sensor Data for Degradation Analytics and Operations & Maintenance Optimization in PV Systems: A Prognostic Approach," The U.S. Department of Energy – Subcontract from Argonne National Laboratory, December 22, 2021 to December 21, 2024. Total federal dollar amount: $330,000, dollar amount allocated to Z. Wang: $321,113

Z. Wang (ISU Single PI), "Scalable Multi - Timescale Analysis Platform Based on System Transient and Dynamic Models," The U.S. Department of Energy – Subcontract from Argonne National Laboratory, November 4, 2021 to September 30, 2024. Total federal dollar amount: $210,000, dollar amount allocated to Z. Wang: $210,000

Z. Wang (Single PI), "CAREER: Learning Smart Meter Data to Enhance Distribution Grid Modeling and Observability," **National Science Foundation CAREER Award**, February 1, 2021 to January 31, 2026. Total federal dollar amount: $500,714, dollar amount allocated to Z. Wang: $500,714

Z. Wang (Lead PI), V. Ajjarapu (ISU), A. Kimber (ISU), J. Bilsten (Algona Municipal Utilities), and T. Wind (Wind Utility Consulting), "Optimal Operation and Impact Assessment of Distributed Wind for Improving Efficiency and Resilience of Rural Electricity Systems," The U.S. Department of Energy, January 01, 2020 to November 30. Total federal dollar amount: $1,177,965, dollar amount allocated to Z. Wang: $791,381

Z. Wang (Lead PI) and A. Kimber, "Shared Micro Phasor Measurement Units (uPMU) for Data-Driven, Real-Time Distribution Monitoring, Modeling and Analysis," Iowa Economic Development Authority, September 01, 2020 to August 21, 2023, Total dollar amount: $300,000, dollar amount allocated to Z. Wang: $210,000

Z. Wang (ISU Single PI), "Federated Architecture for Secure and Transactive Distributed Energy Resource Management Solutions (FAST-DERMS)," The U.S. Department of Energy – Subcontract from National Renewable Energy Laboratory, September 10, 2020 to June 30, 2023. Total federal dollar amount: $105,000, dollar amount allocated to Z. Wang: $105,000

Z. Wang (Lead PI), I. Dobson (ISU), V. Ajjarapu (ISU), J. Chen (IBM), and N. Nayak (Electric Power Group), "Robust Learning of Dynamic Interactions for Enhancing Power System Resilience," The U.S. Department of Energy, October 01, 2019 to March 31, 2022. Total federal dollar amount: $1,000,000, dollar amount allocated to Z. Wang: $229,970

Z. Wang (Single PI), "Data-Driven Voltage VAR Optimization Enabling Extreme Integration of Distributed Solar Energy," National Science Foundation, August 15, 2019 to July 31, 2024. Total federal dollar amount: $346,999, dollar amount allocated to Z. Wang: $346,999

Z. Wang (ISU Lead PI) and I. Dobson (ISU), "A Data-driven Multi-timescale Predictive, Proactive, and Recovery Optimization Framework for Solar Energy Integrated Resilient Distribution Grid," The U.S. Department of Energy – Subcontract from Argonne National Laboratory, October 01, 2018 to March 31, 2020. Total federal dollar amount: $250,000, dollar amount allocated to Z. Wang: $187,500

Z. Wang (Single PI), "Data-Driven and Machine Learning Based Load Modeling," Power Systems Engineering Research Center (PSERC), May 1, 2018 to April 30, 2021. Total dollar amount: $105,326, dollar amount allocated to Z. Wang: $105,326

Z. Wang (Lead PI), A. Kimber (ISU), R. Singh (Argonne National Lab), R. Nath (SIEMENS), and J. Richert (Maquoketa Valley Electric Coop), "Robust Real-Time Modeling of Distribution Systems with Data-Driven Grid-Wise Observability," The U.S. Department of Energy, October 1, 2017 to September 30, 2022. Total federal dollar amount: $1,410,696, dollar amount allocated to Z. Wang: $793,520

Z. Wang (Single PI), "SSDIM: Data Generation for Interdependent Natural Gas and Electrical Power Systems Based on Graph Theory and Machine Learning," National Science Foundation, September 1, 2017 to August 31, 2022. Total federal dollar amount: $400,000, dollar amount allocated to Z. Wang: $400,000

Z. Wang (Lead PI), L. Tesfatsion (ISU) and J. Wang (Southern Methodist University), "Flexible Service Contracting for Risk Management within Integrated Transmission and Distribution Systems," The U.S. Department of Energy, January 1, 2017 to September 30, 2020. Total federal dollar amount: $345,360, dollar amount allocated to Z. Wang: $172,680

Z. Wang (Lead PI) and L. Tesfatsion (ISU), "Matching Grant (Cash Cost Share) to Flexible Service Contracting for Risk Management within Integrated Transmission and Distribution Systems," Iowa Economic Development Authority, January 1, 2017 to September 30, 2020. Total dollar amount: $98,013, dollar amount allocated to Z. Wang: $49,007

Z. Wang (Lead PI), V. Ajjarapu (ISU), and H. Zhu (UT Austin), "Leverage Conservation Voltage Reduction for Energy Efficiency, Demand Side Control and Stability Enhancement in Integrated Transmission and Distribution Systems," Power Systems Engineering Research Center (PSERC), August 22, 2016 to August 31, 2018. Total dollar amount: $230,000, dollar amount allocated to Z. Wang: $80,000

Z. Wang (ISU Single PI), "Measurement-Based Hierarchical Framework for Time-varying Stochastic Load Modeling," The U.S. Department of Energy – Subcontract from Argonne National Laboratory, August 3, 2016 to December 31, 2019. Total federal dollar amount: $450,000, dollar amount allocated to Z. Wang: $450,000

Z. Wang (Single PI), "A Tool for Mining AMI Data to Model Customer Load for Small Public Utilities," American Public Power Authority, August 1, 2016 to July 31, 2017. Total dollar amount: $11,541, dollar amount allocated to Z. Wang: $11,541

Z. Wang (Lead PI) and I. Dobson (ISU), "Data-Driven Modeling, Monitoring and Mitigation of Cascading Outages in Transmission and Distribution Systems," National Science Foundation,

July 15, 2016 to June 30, 2020. Total federal dollar amount: $347,938, dollar amount allocated to Z. Wang: $173,969

Z. Wang (Single PI), "Matching Grant (Cash Cost Share) to Measurement-Based Hierarchical Framework for Time-varying Stochastic Load Modeling," Iowa Economic Development Authority, July 1, 2016 to December 31, 2019. Total dollar amount: $90,000, dollar amount allocated to Z. Wang: $90,000

Z. Wang (Single PI), "Matching Grant (Cash Cost Share) to A Closed-Loop Distribution System Restoration Tool for Natural Disaster Recovery," Iowa Economic Development Authority, July 1, 2016 to December 31, 2019. Total dollar amount: $30,000, dollar amount allocated to Z. Wang: $30,000

Z. Wang (ISU Single PI), "A Closed-Loop Distribution System Restoration Tool for Natural Disaster Recovery," The U.S. Department of Energy – Subcontract from Argonne National Laboratory, June 27, 2016 to December 31, 2019. Total federal dollar amount: $150,000, dollar amount allocated to Z. Wang: $150,000

Z. Wang (Single PI), "Functional assessment of DFIG and PMSG-based wind turbines for grid support applications," Power Systems Engineering Research Center (PSERC), June 1, 2016 to August 31, 2018. Total dollar amount: $47,400, dollar amount allocated to Z. Wang: $47,400

J. McCalley, **Z. Wang (Co-PI)**, H. Villegas, I. Dobson, and A. Kimber, "An Equitable, Affordable & Resilient Nationwide Energy System Transition (EARNEST)," The U.S. Department of Energy – Subcontract from Stanford University, April 1, 2025 to March 31, 2028. Total dollar amount: $999,999, dollar amount allocated to Z. Wang: $149,999

I. Dobson, **Z. Wang (Co-PI)**, and A. Dubey (WSU) "Data-Driven Resilience Modeling, Prediction, and Enhancement," Power Systems Engineering Research Center (PSERC), August 1, 2024 to July 31, 2026. Total dollar amount: $220,000, dollar amount allocated to Z. Wang: $70,000

A. Kimber and **Z. Wang (Co-PI)**, "Mining Smart Meter Data for Modeling and Mitigating EV Charging Impacts on Distribution Grids," Iowa Energy Center, October 1, 2022 to March 31, 2024. Total dollar amount: $203,342, dollar amount allocated to Z. Wang: $101,671

Y. Wang (ISU), **Z. Wang (Co-PI)**, and C. Chen (UTK), "SAI-R: A Community-Centered Decision-Making Framework for Microgrid Deployment," National Science Foundation, September 15, 2022 to August 31, 2025. Total federal dollar amount: $750,000, dollar amount allocated to Z. Wang: $300,000

C. Hu, A. Kimber, **Z. Wang (Co-PI)**, and G. Okudan-Kremer, "Predicting Battery Lifetime with Early-Life Data for Grid Applications," Iowa Energy Center, October 1, 2020 to September 30, 2023. Total dollar amount: $280,070, dollar amount allocated to Z. Wang: $64,416

L. Tesfatsion (ISU), **Z. Wang (Co-PI)**, and S. Bose (UIUC), "Market and Control Mechanisms Enabling Flexible Service Provision by Grid-Edge Resources within End-to-End Power Systems," Power Systems Engineering Research Center (PSERC), July 1, 2019 to August 31, 2021. Total dollar amount: $220,000, dollar amount allocated to Z. Wang: $70,000

L. Tesfasion (ISU) and **Z. Wang (Co-PI)**, "Development of an Integrated Transmission and Distribution Test System to Evaluate Transactive Energy Systems," The U.S. Department of Energy – Subcontract from Pacific Northwest National Laboratory, March 19, 2018 to July 31, 2019. Total federal dollar amount: $100,000, dollar amount allocated to Z. Wang: $50,000

L. Tesfasion (ISU) and **Z. Wang (Co-PI)**, "Development of an Integrated Transmission and Distribution Test System to Assist the Evaluation of Transactive Energy Initiatives," The U.S. Department of Energy – Subcontract from Pacific Northwest National Laboratory, April 1, 2017 to March 31, 2019. Total federal dollar amount: $129,407, dollar amount allocated to Z. Wang: $64,703

A. Alipour (ISU), **Z. Wang (Co-PI)**, and L. Tesfatsion, "Resilience Enhancement of Electric Power Systems and Associated Infrastructures," Iowa Economic Development Authority, October 1, 2017 to July 31, 2018. Total dollar amount: $124,508, dollar amount allocated to Z. Wang: $31,127

III. TEACHING AND STUDENT MENTORING

A. Instruction for ISU

Term	Course number	Course Title	Credits	Lab	Number of students	TA/graders
Fall 2024	EE455	Introduction to Energy Distribution Systems	3	No	16	0/1
Fall 2023	EE653	Power Distribution System Protection, Outage Management, and Reliability	3	No	13	0/1
Spring 2023	EE455	Introduction to Energy Distribution Systems	3	No	34	0/1
Fall 2022	EE303	Energy Systems and Power Electronics	3	No	43	0/1
Spring 2021	EE455	Introduction to Energy Distribution Systems	3	No	41	0/1
Spring 2020	EE455	Introduction to Energy Distribution Systems	3	No	42	0/1
Fall 2019	EE653	Power Distribution System Modeling, Optimization and Simulation	3	No	14	0/0
Spring 2019	EE555	Advanced Energy Distribution Systems	3	No	9	0/0
Fall 2018	EE455	Introduction to Energy Distribution Systems	3	No	32	0/1
Spring 2018	EE303	Energy Systems and Power Electronics	3	No	87	1/1

Fall 2017	EE555	Advanced Energy Distribution Systems	3	No	12	0/0
Spring 2017	EE455	Introduction to Energy Distribution Systems	3	No	36	0/1
Fall 2016	EE303	Energy Systems and Power Electronics	3	No	77	1/1
Spring 2016	EE303	Energy Systems and Power Electronics	3	No	56	1/0
Fall 2015	EE456	Power System Analysis I	3	No	57	1/0

B. Supervision of Students as Major Professor

20. Junyuan Zheng, PhD, August 2024 – present, work in progress.

19. Feixiang Zhang, PhD, August 2023 – present, work in progress.

18. Cong Bai, PhD, August 2023 – present, work in progress.

17. Priyanka Lama, MS, January 2023 – present, work in progress.

16. Liming Liu, PhD, August 2021 – present, work in progress.

15. Dingwei Wang, PhD, January 2021 – present, work in progress.

14. Naihao Shi, PhD, August 2020 – present, work in progress.

13. Rui Cheng, August 2019 – June 2023, "Scalable Offline and Online Decision-Making for Next-Generation Autonomous Power Systems". **ISU Graduate College Research Excellence Awardee.**

12. Yanchao Wang, (Matthew Darr, Major Professor) PhD, January 2020 – April 2023, "Data Analytics for Event Identification Using Real Phasor Measurement Unit Data".

11. Zixiao Ma, PhD, May 2017 – March 2023, "Composite Load Modeling and Simplification in Power Systems". **ISU Graduate College Research Excellence Awardee.**

10. Fankun Bu, PhD, January 2018 – December 2022, "Disaggregating Behind-the-Meter PV Generation and Native Demand from Smart Meter Data".

9. Jinqiang Liu, PhD, (Chao Hu, co-advisor), PhD, August 2018 – November 2022, "Data-driven Lithium-ion Battery Capacity Degradation Early Prediction and Modeling".

8. Yuxuan Yuan, PhD, August 2017 – November 2022, "Data Analytics for Enhancing Power Distribution System Monitoring". **IEEE PES Outstanding Doctoral Dissertation Awardee. ISU Graduate College Research Excellence Awardee. Recipient of The Chinese Government Award for Outstanding Self-financed Students Abroad - the highest government award granted by the Chinese government to Chinese students overseas.**

7. Qianzhi Zhang, PhD, September 2017 – April 2022, "Multi-Agent Optimization and Learning in Power Distribution Systems".

6. Kai Zhou (Ian Dobson, co-advisor), PhD, January 2017 – January 2022, "Data analysis of cascading outages using historical data to mitigate blackouts".

5. Nichelle'Le Carrington (Ian Dobson, co-advisor), PhD, August 2015 – January 2022, '' Extracting Resilience Metrics and Load Composition Using Utility Data". **2023 EECS Rising Star**.

4. Swathi Battula (Leigh Tesfatsion, co-advisor), PhD, January 2017 – February 2021, "Transactive energy system design for integrated transmission and distribution systems."

3. Nicholas David, PhD, January 2017 – October 2020, "The nature of double-fed induction generators for frequency and voltage support from wind turbines."

2. Shanshan Ma, PhD, August 2015 – December 2019, "A Proactive Energy Management and Preparation Approach for Electric Distribution Grid". **ISU Graduate College Research Excellence Awardee. Recipient of The Chinese Government Award for Outstanding Self-financed Students Abroad - the highest government award granted by the Chinese government to Chinese students overseas.**

1. Anmar Arif, PhD, August 2015 – July 2019, "Distribution system outage management after extreme weather events". **ISU Graduate College Research Excellence Awardee.**

C. Service on Graduate Student Committees

14. Ramij-Raja Hossain, PhD in progress, ECpE, Committee Member.

13. Abhinav Venkatraman, PhD, ECpE, Committee Member

12. Arslan Ahmad, 2023, MS, ECpE, Committee Member

11. Adam Thelen, 2023, PhD, ME, Committee Member

10. Alok Kumar Bharati, 2021, PhD, ECpE, Committee Member

9. Yu-Hui, Lui, 2021, PhD, IMSE, Committee Member

8. Dan Hu, 2019, PhD, IMSE, Committee Member

7. Ankit Singhal, 2019, PhD, ECpE, Committee Member

6. Ashraf Radaideh, 2018, PhD, ECpE, Committee Member

5. Qilin Liu, 2018, MS, Civil Engineering, Committee Member

4. Shiyang Li, 2017, PhD, ECpE, Committee Member

3. Srikrishna Sarangan, 2017, MS, ECpE, Committee Member

2. Yee Er Teoh, 2017, MS, Civil Engineering, Committee Member

1. Yu-Wen Chen, 2016, PhD, ECpE, Committee Member

D. Supervision of Post-Doctoral Students and Professional Staff

11. Yunyi Li, December 2024 – present, "Resilience Evaluation and Enhancement of Charging Stations with Hierarchical Adaptive Restoration of Grids and Distributed Energy Resources (RECHARGE)"

10. Wenlong Shi, December 2024 – present, “Data-Driven Resilience, Modeling, Prediction, and Enhancement.”

9. Hongyi Li, August 2024 – present, “Modernizing Operation and Decision-Making Tools Enabling Resource Management In Stochastic Environment (MODERNISE).”

8. Salish Maharjan, February 2022 – present, “Optimal Operation and Impact Assessment of Distributed Wind for Improving Efficiency and Resilience of Rural Electricity Systems.”

7. Han Wang, August 2023 – March 2025 “Solar-Assisted, Stakeholder-Engaged, Autonomous Restoration with Data Orchestration (Solar-HERO).”

6. Yingmeng Xiang, February 2021 – September 2021, “Robust Real-Time Modeling of Distribution Systems with Data-Driven Grid-Wise Observability,” and “Optimal Operation and Impact Assessment of Distributed Wind for Improving Efficiency and Resilience of Rural Electricity Systems.”

5. Yongli Zhu, September 2020 – March 2021, “Robust Real-Time Modeling of Distribution Systems with Data-Driven Grid-Wise Observability.”

4. Yifei Guo, November 2019 – November 2020, “Optimal Operation and Impact Assessment of Distributed Wind for Improving Efficiency and Resilience of Rural Electricity Systems.”

3. Kaveh Dehghanpour, January 2018 – August 2020, “Robust Real-Time Modeling of Distribution Systems with Data-Driven Grid-Wise Observability.”

2. Hieu Nguyen, May 2017 – August 2018, “Development of an Integrated Transmission and Distribution Test System to Evaluate Transactive Energy Systems,” Current position: Assistant Professor at North Carolina A&T University.

1. Chong Wang, January 2017 – August 2018, “Measurement-Based Hierarchical Framework for Time-varying Stochastic Load Modeling,” Current position: Associate Professor at Hohai University, China.

IV. PROFESSIONAL SERVICE

A. Editorial and Review Service for Manuscripts

16. Associate Editor, IEEE Transactions on Sustainable Energy, 2023 - present

15. Guest Editor, IET Smart Grid Special Issue on “Digital twins for distributed energy resources management and scheduling,” 2023 - 2024

14. Guest Editor, IET Smart Grid Special Issue on “Swarm intelligence modelling and control for multi-vector energy microgrids,” 2023 - 2024

13. Guest Editor, International Journal of Electrical Power & Energy Special Issue on “Advances in Volt/Var Control for Active Distribution Networks with High-Level Intermittent Renewable Energy Resources,” 2022 – 2023

12. Topic Editor, Frontiers in Energy Research, Research Topic on “Flexibility Analysis and Regulation Technology of Clean Energy System,” 2022 - 2023

11. Editorial Board Member, Protection and Control of Modern Power Systems, 2022 - 2025

10. Guest Lead Editor, IEEE Transactions on Sustainable Energy Special Section on “Sustainable Energy for Enhancing Grid Resiliency,” 2021 - 2023

9. Member, IEEE Open Access Journal of Power and Energy Task Force (TF) on Website of Resource, 2020 – 2021

8. Associate Editor, IEEE Open Access Journal of Power and Energy, 2020 – present

7. Associate Editor, IEEE Transactions on Power Systems, 2019 – 2022

6. Associate Editor, IET Smart Grid, 2018 – present

5. Associate Editor, IEEE Transactions on Smart Grid, 2016 – 2022

4. Associate Editor, IEEE Power Engineering Letters, 2016 – present

3. Guest Editor, IET Generation, Transmission & Distribution Special Issue on “Advanced data-analytics for power system operation, control, and enhanced situational awareness,” 2019-2020

2. Lead Guest Editor, IET Smart Grid Special Issue on “Machine Learning in Power systems,” 2019 – 2020

1. Reviewer, IEEE Transactions on Power Systems, IEEE Transactions on Smart Grids, IEEE Transactions on Power Delivery, ASCE Journal of Energy Engineering, IEEE P Engineering Letters, Applied Energy, Energy, Journal of Modern Power Systems and Clean Energy, International Journal of Electrical Power and Energy Systems, IEEE Transactions on Sustainable Energy, IET Generation, Transmission & Distribution, IEEE Systems Journal, IEEE Transactions on Circuits and Systems II, IEEE Access, IEEE Transactions on Vehicular Technology, IET Smart Grid, International Journal of Electrical Energy Systems, IEEE Journal on Emerging and Selected Topics in Circuits and Systems, Energies, Electric Power Systems Research.

B. Service to Professional Societies

B. 1. Technical Committee Officers

9. Secretary and Technical Committee Program Chair (TCPC), IEEE Power System Operation, Planning and Economics (PSOPE) Committee, 2023 – present

8. Co-TCPC, IEEE Power System Operation, Planning and Economics (PSOPE) Committee, 2022 – 2023

7. Vice Chair, IEEE PES Distribution System Operation and Planning Subcommittee, 2022 – present

6. Chair, IEEE Power System Operation, Planning and Economics (PSOPE) Committee Awards Subcommittee, 2021 – present

5. Secretary, IEEE Task Force on IEEE P3102™ Draft Full Use Standard for Conservation Voltage Reduction (CVR) Data Collection and Management Procedures, 2024 - present

4. Section Lead of Methodologies Selection, IEEE P3102™ Draft Full Use Standard for Conservation Voltage Reduction (CVR) Data Collection and Management Procedures, 2020 - present

3. Vice Chair, IEEE PES Task Force on Advances in Natural Disaster Mitigation, 2019 – present

2. Co-Vice Chair, IEEE PES Distribution System Operation and Planning Subcommittee, 2019 - 2022

1. Secretary, IEEE PSOPE Awards Subcommittee, 2018 - 2021

B. 2. Conferences

32. Panel Chair, INFORMS Annual Meeting 2025, “Real-World Data Analytics and Optimization for Improving Power Grid Operation, Planning, and Resilience,” October 27, 2025.

31. Panel Co-Chair, IEEE Power and Energy Society General Meeting 2025, “Grid Service Provision and Market Integration of Distributed Energy Resources,” July 31, 2025

30. Panel Co-Chair, IEEE Power and Energy Society General Meeting 2025, “Unleashing DER Flexibility for Enhancing Grid Reliability, Efficiency, and Resilience,” July 30, 2025

29. Panel Co-Chair, IEEE Power and Energy Society General Meeting 2025, “Powering the Future: Smart Grid Solutions for Electrification and Capacity Challenges,” July 29, 2025

28. Technical Track Chair for the technical area of “Resilient Control Architectures for Energy Systems”, 50th Annual Conference of The IEEE Industrial Electronics Society (IECON), Chicago, November 3-6, 2024

27. Panel Co-Chair, IEEE Power and Energy Society General Meeting 2024, “Big Data and Machine Learning for Modeling and Operation of Advanced Distribution Grids and Microgrids,” July 25, 2024

26. Panel Co-Chair, IEEE Power and Energy Society General Meeting 2024, “Industry Experiences with Grid Edge Technologies Deployment: Trends, Challenges, and Strategies,” July 23, 2024

25. Panel Chair, IEEE PES T&D 2024: “Synchrophasor Monitoring Applications in IBR-rich Distribution Grids,” May 8, 2024

24. Panel Chair, IEEE PES T&D 2024: “Leveraging Big Data to Improve Distribution Grid Modeling and Operation,” May 8, 2024

23. Technical Program Committee member, 2022 IEEE International Conference on Innovative Smart Grid Technologies (ISGT-Asia) November 2-5, 2022

22. Co-chair of Control and Operations Symposium, 2022 IEEE SmartGridComm, Singapore, October 25-28, 2022

21. Panel Co-Chair, IEEE Power and Energy Society General Meeting 2022, “Resilience Metrics under Natural Disaster: Best Practices and Mitigation,” July 26, 2021

20. Panel Co-Chair, IEEE Power and Energy Society General Meeting (virtual) 2021, “Natural Disaster Mitigation: Best Practices,” July 26, 2021

19. Technical Committee Co-Chair, 12th IEEE Asia-Pacific Power and Energy Engineering Conference (APPEEC), September 20-23, 2020

18. Panel Chair, IEEE PES T&D 2020: “Mining Utility Data for Improving Power System Operation and Resilience,” April 2020

17. Panel Chair, IEEE PES T&D 2020: “Advanced Distribution Management Systems for Intelligence, Efficiency and Resilience,” April 2020

16. Panel Chair, IEEE PES ISGT 2020: “Machine Learning-based Decision Making for Power System Operation,” February 2020

15. Panel Chair, IEEE PES ISGT 2020: “Disaster Awareness, Restoration and Stability Enhancement of Resilient Distribution Grids with Increasing Penetration of Inverter-based Resources,” February 2020

14. Panel Chair, IEEE PES ISGT 2020: “Definition, Planning and Operations of Resilient Electric Grids,” February 2020

13. Session Chair, North America Power Symposium (NAPS) 2019: “Session 4.D: Volt-Var. Control, Distribution System Track,” October 2019

12. Panel Chair, IEEE PES General Meeting 2019: “Data-Driven Approaches for Mitigation of Natural Disasters Impacts on Power Grids,” August 2019

11. Panel Chair, IEEE PES General Meeting 2019: “Transient Modeling and Analysis of Distribution Systems,” August 2019

10. Tutorial Co-Organizer, IEEE PES ISGT 2019: “Power System Resilience: Fundamentals, Analytical and Planning Tools, and Industry Practices,” February 2019

9. Panel Chair, IEEE PES ISGT 2019: “National Power Grid Resilience Modeling,” February 2019

8. Panel Chair, IEEE PES ISGT 2019: “Data Analytics for Grid Resilience Modeling and Enhancement,” February 2019

7. Panel Co-Chair, IEEE PES ISGT 2019: “Artificial Intelligence in Power System Operations and Planning,” February 2019

6. IEEE Innovative Smart Grid Technologies Conference Paper Session Chair, September 2016

5. IEEE Power and Energy Society General Meeting Paper Forum Chair, July 2016

4. Technical Program Committee Member, International Conference on Smart Energy Systems and Technologies (SEST), 2019

3. Technical Program Committee Member, 4th Intl. Conference on Soft Computing & Machine Intelligence, 2017

2. Technical Program Committee Member, The International Symposium on Intelligent Systems Technologies and Applications, 2015 and 2016

1. Technical Program Committee Member, IEEE SmartGridComm, 2014

C. Grant Review Activities

14. Panel member, National Science Foundation, April 2024

13. Panel member, National Science Foundation, October 2023

12. Panel member, California Climate Action Review Panel, June 2023

11. Panel member, National Science Foundation, March 2023

10. Panel member, National Science Foundation, February 2023

9. Panel member, National Science Foundation, February 2022

8. Panel member, National Science Foundation, May 2021

7. Panel member, Department of Energy, July 2020

6. Panel member, National Science Foundation, July 2020

5. Panel member, National Science Foundation, February 2020

4. Panel member, National Science Foundation, February 2019

3. Panel member, National Science Foundation, June 2018

2. Panel member, National Science Foundation, April 2018

1. Panel member, National Science Foundation, April 2016

D. Institutional Service

13. Chair of Research Professor Search Committee, July 2024

12. Member, ECpE Infrastructure Planning and Development Committee, 2023 - 2025

11. Member, ECpE Election and Oversight Committee, 2023 - 2025

10. Chair of adhoc committee on Harpole-Pentair Junior Professorship Award evaluation, January 2023

9. Member and Power/Control Area Search Chair, Faculty Search Subcommittee, September 2022 – December 2022

8. Member, ECpE Academic Accreditation Committee, 2022 - 2025

7. Member, Department Research Committee, 2021 - 2025

6. Member and Energy Infrastructure Subcommittee Chair, Faculty Search Subcommittee, September 2018 – May 2019

5. Member, Seminar Series Committee, September 2018 – December 2020

4. Member, Promotion, Tenure, and Review Committee, September 2018 – May 2019

3. Member, Subcommittee to review ADVANCE work environment survey report, January 2018 – May 2018

2. Member, Election and Oversight Committee, September 2016 – December 2020

1. Member, EE394/494 ABET review committee, January 2016 – May 2016