Jinshun Su

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<u>LinkedIn Profile</u> | <u>Google Scholar Profile</u> | <u>ResearchGate Profile</u>

APPOINTMENTS & EMPLOYMENT

Postdoctoral Research Associate   **Jul. 2025-Present**
Department of Civil & Environmental Engineering, University of Virginia   *Charlottesville, VA*

Power System Intern – Data Science Consultant   **Mar. 2024-Aug. 2024**
Exelon Corporation   *Washington, DC*

Visiting Researcher (supported by NSF)   **Aug. 2023-Dec. 2023**
Pacific Northwest National Laboratory (PNNL)   *Richland, WA*

EDUCATION

The George Washington University, Washington, DC, USA   **Aug. 2019-May 2025**
Ph.D. in Electrical Engineering
- *Advisor:* Prof. Payman Dehghanian
- *Dissertation:* Decision Making on Transportable Resilience Delivery for Short-Term Disaster Management in Power Distribution Systems

The George Washington University, Washington, DC, USA   **Aug. 2017-May 2019**
M.Sc. in *Electrical Engineering*
- *Advisor:* Prof. Payman Dehghanian
- *Thesis:* On the Use of Wind Power and Pumped-Storage Hydro for Blackout Restoration and Resilience

Xi'an University of Technology, Xi'an, Shaanxi, China   **Aug. 2013-Jul. 2017**
B.Eng. in Electrical Engineering

RESEARCH INTEREST

Theories: Applications in Power Systems
- **Decision-dependent uncertainty:** Post-disaster assignment of mobile power sources
- **Chance-constrained programming:** Pre-positioning of mobile power sources
- **Second-order Stochastic dominance:** Mitigating wildfire risks
- **Tri-level optimization:** Defending against false data injection
- **Logistic regression:** Multi-dimensional fragility function for power line conductors in wildfires
- **Reinforcement learning:** Dispatching transportable wind turbines

HONORS & AWARDS

- GW ECE Best Dissertation Award   **2025**
- North America's #1 High-Performing Student Chapter, IEEE Power and Energy Society (PES)'s 2024 High-Performing Student Branch Chapter Program (HPSBC) [*serving as chapter chair*]   **2025**
- North America's #3 High-Performing Student Chapter, IEEE Power and Energy Society (PES)'s 2023 High-Performing Student Branch Chapter Program (HPSBC) [*serving as chapter chair*]   **2024**
- IEEE Industry Application Society (IAS) Electrical Safety through Design Student Education Initiative Award   **2024**
- NSF INTERN Award: Non-Academic Research Internships for Graduate Students   **2023**
- IEEE Industry Application Society (IAS) Electrical Safety through Design Student Education Initiative Award   **2023**

PUBLICATIONS

This list includes a total of **23** technical peer-reviewed papers including **9** journal articles (7 published & 2 under review) and **14** conference papers (12 published & 2 accepted). The total number of citations according to Google Scholar is currently **182** (h-index: 8)
Published Peer-Reviewed Journal Articles (J):
[J7]   R. Zhang, **J. Su**, P. Dehghanian, M. Alhazmi, and X. Fan, "Deep Reinforcement Learning-Based Allocation of Mobile Wind Turbines for Enhancing Resilience in Power Distribution Systems," *IEEE Transactions on Sustainable Energy*, 2025 (<u>Early Access</u>)

Last Updated: November 25

[J6] **J. Su**, R. Zhang, P. Dehghanian, M. H. Kapourchali, S. Choi, and Z. Ding, "Renewable-Dominated Mobility-As-A-Service Framework for Resilience Delivery in Hydrogen-Accommodated Microgrids," *International Journal of Electrical Power and Energy Systems*, vol. 159, pp. 110047, Aug. 2024

[J5] **J. Su**, S. Mehrani, P. Dehghanian, and M. A. Lejeune, "Quasi Second-Order Stochastic Dominance Model for Balancing Wildfire Risks and Power Outages due to Proactive Public Safety De-Energizations," *IEEE Transactions on Power Systems*, vol. 39, no. 2, pp. 2528-2542, Mar. 2024

[J4] M. Nazemi, P. Dehghanian, Y. Darestani, and **J. Su**, "Parameterized Wildfire Fragility Functions for Overhead Power Line Conductors," *IEEE Transactions on Power Systems*, vol. 39, no. 2, pp. 2517-2527, Mar. 2024

[J3] **J. Su**, D. Anokhin, P. Dehghanian, and M. A. Lejeune, "On the Use of Mobile Power Sources in Distribution Networks under Endogenous Uncertainty," *IEEE Transactions on Control of Network Systems*, vol. 10, no. 4, pp. 1937-1949, Dec. 2023

[J2] **J. Su**, P. Dehghanian, and M. A. Lejeune, "Price-based unit commitment with decision-dependent uncertainty in hourly demand," *IET Smart Grid*, vol. 5, no.1, pp.12-24, Feb. 2022

[J1] D. Anokhin, P. Dehghanian, M. A. Lejeune, and **J. Su**, "Mobility-As-A-Service for Resilience Delivery in Power Distribution Systems," *Production and Operations Management*, vol. 30, no. 8, pp. 2492-2521, Aug. 2021

Conference Proceedings (C):

[C12] Y. Li, P. Dehghanian, X. Zhang, **J. Su**, R. Zhang, "Exploring the Capabilities and Limitations of Recommender System Models in the Electric Power Sector," *2025 IEEE Texas Power and Energy Conference (TPEC)*, Feb. 2025, College Station, Texas, USA

[C11] B. Zargar, M. Ferdowsi, **J. Su**, Y. Li, P. Dehghanian, and R. Hibberts-Caswell, "Linear Distribution System State Estimation with Synchrophasor Measurements and Voltage-Dependent Load Model," *2025 IEEE Texas Power and Energy Conference (TPEC)*, Feb. 2025, College Station, Texas, USA

[C10] H. Wang, **J. Su**, and P. Dehghanian, "Operation and DC Protection of Hybrid DRU-MMC HVDC System for Offshore Wind Integration," *2024 IEEE Industry Applications Society (IAS) Annual Meeting*, Oct. 2024, Phoenix, Arizona, USA

[C9] R. Zhang, **J. Su**, P. Dehghanian, and M. Alhazmi, "Deep Reinforcement Learning-Aided Pre-Positioning of Mobile Wind Turbines to Enhance Power Distribution System Resilience," *2024 North American Power Symposium (NAPS)*, Oct. 2024, El Paso, Texas, USA

[C8] **J. Su,** and P. Dehghanian, "Post-Disaster Dispatch of Transportable Wind Turbines for Enhancing Resilience of Power Distribution Systems," *2024 IEEE Texas Power and Energy Conference (TPEC)*, Feb. 2024, College Station, Texas, USA

[C7] **J. Su**, R. Zhang, P. Dehghanian, and M. H. Kapourchali, "Pre-Disaster Allocation of Mobile Renewable-Powered Resilience-Delivery Sources in Power Distribution Networks," *2023 North American Power Symposium (NAPS)*, Oct. 2023, Asheville, North Carolina, USA

[C6] C. Xie, **J. Su**, and P. Dehghanian, "Optimal Energy Scheduling in Seaport Integrated Energy Systems," *2023 IEEE PES GTD International Conference and Exposition (GTD)*, May 2023, Istanbul, Turkey

[C5] **J. Su**, C. Xie, P. Dehghanian, and S. Mehrani, "Optimal Defense Strategy Against Load Redistribution Attacks under Attacker's Resource Uncertainty: A Trilevel Optimization Approach," *2023 IEEE PES Grid Edge Technologies Conference & Exposition*, Apr. 2023, San Diego, California, USA

[C4] R. Zhang, Y. Li, M. Hijazi, **J. Su**, and P. Dehghanian, "Machine Learning-Aided Enhancement of Power Grid Resilience to Electromagnetic Pulse Strikes," *2022 North American Power Symposium (NAPS)*, Oct. 2022, Salt Lake City, Utah, USA

[C3] **J. Su**, P. Dehghanian, B. Vergara, and M. H. Kapourchali, "An Energy Management System for Joint Operation of Small-Scale Wind Turbines and Electric Thermal Storage in Isolated Microgrids," *2021 North American Power Symposium (NAPS)*, Nov. 2021, College Station, Texas, USA

[C2] **J. Su**, P. Dehghanian, M. Nazemi, and B. Wang, "Distributed Wind Power Resources for Enhanced Power Grid Resilience," *2019 North American Power Symposium (NAPS)*, Oct. 2019, Wichita, Kansas, USA

[C1] S. Wang, P. Dehghanian, M. Alhazmi, **J. Su** and B. Shinde, "Resilience-Assured Protective Control of DC/AC Inverters Under Unbalanced and Fault Scenarios," *2019 IEEE Power and Energy Society (PES) Conference on Innovative Smart Grid Technologies-North America (ISGT-NA)*, 18-21 Feb. 2019, Washington DC, USA

Working Papers:

[P4] R. Zhang, P. Dehghanian, **J. Su**, M. Alhazmi, and D. Celeita, "Enhancing Bulk Electric Grid Resilience against Electromagnetic Pulse (EMP) Events: A Frequency Control-based Mitigation Approach," *IEEE Transactions on System, Man and Cybernetics*, (Under Review)

[P3] P. Dehghanian, M. Lejeune, **J. Su**, and Z. Wang, "Resilience Enhancement in Power Distribution Systems: Chance-Constrained Model with Decision-Dependent Atoms," *Computers and Operations Research*, (Under Review)

[P2] Y. Li, X. Ma, P. Dehghanian, X. Zhang, R. Zhang, B. Vergara, H. Wang, and **J. Su**, "A Hardware-in-the-Loop-Based Digital Twin Cyber-Physical System for Microgrids," *2025 IEEE Power and Energy Society (PES) Innovative Smart Grid Technologies-Asia (ISGT-Asia)*, (Accepted)

[P1] D. Okpo, C. Zhao, and **J. Su**, "Coulomb Counting-Based SOC Estimation from Real EV Data via LSTM and Transformer Models," *2025 North American Power Symposium (NAPS)*, (Accepted)

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TEACHING EXPERIENCE

- **Teaching Assistant** for *ECE 2115: Engineering Electronics*, ***Instructor:*** Prof. Shahrokh Ahmadi, The George Washington University — **Jan. 2025-May 2025**
- **Teaching Assistant** for *ECE 2210: Circuits, Signals, and Systems*, ***Instructor:*** Prof. Amir Aslani, The George Washington University — **Jan. 2025-May 2025**
- **Teaching Assistant** for *ECE 6691: Power System Reliability*, ***Instructor:*** Prof. Niloofar Pourghaderi, The George Washington University — **Jan. 2025-May 2025**
- **Teaching Assistant** for *ECE 6669: Smart Power Grids*, ***Instructor:*** Prof. Payman Dehghanian, The George Washington University — **Jan. 2019-May 2019**

INVITED TALKS & CONFERENCE PRESENTATIONS

[T11] "Proactive and Reactive Strategies for Enhancing Power Distribution System Resilience Against Wildfires," Department of Electrical and Computer Engineering, The University of Texas Rio Grande Valley, Edinburg, TX — **Mar. 2025**

[T10] "Linear Distribution System State Estimation with Synchrophasor Measurements and Voltage-Dependent Load Model," *2025 IEEE Texas Power and Energy Conference (TPEC)*, College Station, TX — **Feb. 2025**

[T9] "Enhancing Electrical Safety Measures in Wildfire Mitigation through Strategic Public Safety Power Shutoff Actions," *2024 IEEE Industry Applications Society (IAS) Electrical Safety Workshop*, Tucson, AZ — **Mar. 2024**

[T8] "Post-Disaster Dispatch of Transportable Wind Turbines for Enhancing Resilience of Power Distribution Systems," *2024 IEEE Texas Power and Energy Conference (TPEC)*, College Station, TX — **Feb. 2024**

[T7] "Pre-Disaster Allocation of Mobile Renewable-Powered Resilience-Delivery Sources in Power Distribution Networks," *2023 North American Power Symposium (NAPS)*, Asheville, NC — **Oct. 2023**

[T6] Transitions Toward Green Hydrogen and Implications for Electrical Safety," *2023 IEEE Industry Applications Society (IAS) Electrical Safety Workshop*, Reno, NV — **Mar. 2023**

[T5] "Electric Power Grid Resilience to Load Redistribution Cyber Attacks Under Attacker's Behavioral Uncertainty," *2022 INFORMS Conference on Security*, Arlington, VA — **Aug. 2022**

[T4] "Navigating the IEEE Power and Energy Society (PES) & Industry Applications Society (IAS) Student Branch Chapter at the George Washington University," *2022 IEEE PES General Meeting*, Denver, CO — **Jul. 2022**

[T3] "An Energy Management System for Joint Operation of Small-Scale Wind Turbines and Electric Thermal Storage in Isolated Microgrids," *2021 North American Power Symposium (NAPS)*, College Station, TX — **Nov. 2021**

[T2] "Distributed Wind Power Resources for Enhanced Power Grid Resilience," *ECE Research Blitz, George Washington University*, Washington, DC — **Nov. 2019**

[T1] "Distributed Wind Power Resources for Enhanced Power Grid Resilience," *2019 North American Power Symposium (NAPS)*, Wichita, KS — **Oct. 2019**

FUNDED PROJECT EXPERIENCE

- Served as student lead on the project entitled "*Collaborative Research: NNA Research: Collaborative Research: Foundations for Improving Resilience in the Energy Sector against Wildfires on Alaskan Lands (FIREWALL),*" National Science Foundation (NSF), Navigating the New Arctic (NAA) Program, **PI:** Prof. Payman Dehghanian — **2022-2025**
- Served as student lead on the project entitled "*Mobility-As-A-Service for Resilience Delivery in Power Grids: Stochastic Programming Advancements under Decision-Dependent Uncertainties,*" NSF, Energy, Power, Control, and Networks (EPCN) Program, **PI:** Prof. Payman Dehghanian — **2021-2025**
- Served as student lead on the project entitled "*Collaborative Research: NNA Track 2: Foundations for Improving Resilience in the Energy Sector against Wildfires on Alaskan Lands (FIREWALL),*" NSF, NAA Program, **PI:** Prof. Payman Dehghanian — **2020-2022**
- Served as student lead on the project entitled "*Effective Management of Endogenous Uncertainties in Large-Scale Power Grids,*" Cross-Disciplinary Research Fund (CDRF), George Washington University, **PI:** Prof. Miguel Lejeune, **Co-PI:** Prof. Payman Dehghanian — **2019-2020**

SERVICES & ACTIVITIES

Referee Services:
- **Reviewer** for Journals: *IEEE Transactions on Smart Grid* — **2019-Present**
  IEEE Transactions on Power Systems
  IEEE Transactions on Sustainable Energy
  IEEE Transactions on Industry Applications
  IEEE Transactions on Transportation Electrification
  IEEE Power Engineering Letters
  IEEE Internet of Things Journal

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IEEE Access
IET Generation, Transmission & Distribution
Scientific Reports
Renewable and Sustainable Energy Reviews
Reliability Engineering & System Safety
Sustainable Energy, Grids and Networks
Energy Efficiency
Journal of Modern Power System and Clear Energy

- **Reviewer** for Conferences: *2025 IEEE PES General Meeting*   **2021-Present**
                                     2025 IEEE Texas Power and Energy Conference
                                     2021 IEEE Green Technologies Conference

Conference Services:

- **Session Chair** for *2022 INFORMS Conference on Security*, Arlington, VA   **Aug. 2022**
- **Organizing Committee Member** for *FIREWALL workshop 2021*, Online   **Sep. 2021**
- **Volunteer** for *2024 International Conference on Smart Grid Synchronized Measurements & Analytics*,   **May 2024**
  Washington, DC
- **Volunteer** for *2019/2020/2022/2023/2024 IEEE PES Conference on Innovative Smart Grid Technologies-North*   **2019-2024**
  America (ISGT-NA), Washington, DC
- **Volunteer** for *2022 IEEE PES General Meeting*, Denver, CO   **Jul. 2022**

Student Organization Services:

- **Chair (2022-2024)/Vice chair (2020-2022)/Secretary (2018-2020)** for IEEE Power and Energy Society (PES)   **2018-2024**
  & Industry Applications Society (IAS) Joint Student Branch Chapter at George Washington University

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