

Sanjana Kunkolienkar

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Education

Texas A&M University College Station, TX
Ph.D., Electrical and Computer Engineering Expected Aug. 2027

Current GPA: 3.98

Dissertation Topic: Strengthening Electric Grid Resilience to Cascade Failures by Leveraging Area Structure of Transmission Networks.

Mumbai University Mumbai, India
B.Tech., Electrical Engineering May 2018

GPA: 8.92

Experience

Texas A&M University College Station, TX
Graduate Research Assistant, Energy and Power Research Group Aug. 2021–Present

Pacific Northwest National Lab Remote
PhD Intern, Power Systems, Electricity Infrastructure and Buildings Division Feb. 2026–Present

Electric Power Engineers, LLC Texas
Power System Engineer, Intern, Transmission Planning Team May 2023–Aug. 2023

Siemens Ltd. India
Technical Professional Jul. 2018–May 2021

Teaching

- Teaching Assistant, ECEN 615: Elements of Power System Analysis (Fall 2022, Fall 2025)
- Graduate Mentoring Academy Fellow, 2025
- Guest Lecturer for course ECEN 340: Electric Energy Conversion, Fall 2025
- Fellow of the Academy for Future Faculty, Center for the Integration of Research, Teaching, and Learning (CIRTL), Apr. 2024
- Guest Lecturer for course ECEN 460: Power System Operation and Control, Spring 2024
- Teaching Assistant for course ECEN 667: Power System Dynamics and Stability, Fall 2023
- Grader for course ECEN 215: Principles of Electrical Engineering, Fall 2021

Publications

Journal Publications

[J2] **S. Kunkolienkar**, F. Safdarian, T. J. Overbye, “Toward Realism: Sparse Matrix Statistics in the North American and Synthetic Electric Grid Models,” *IEEE Transactions on Power Systems*, 2026

[J1] S. Israel, **S. Kunkolienkar**, A. Goulart, K. Davis, T.J. Overbye. “A Scalable Automatic Model Generation Tool for Cyber-Physical Network Topologies and Data Flows for Large-Scale Synthetic Power Grid Models.” *ACM Transactions on Cyber-Physical Systems*, Nov. 2025

Conference Publications

- [C14] K. Zhgun, **S. Kunkolienkar**, F. Safdarian, T.J. Overbye, J. Weber. “Quickly Detecting and Correcting Alternative Power Flow Solutions with Large Grid Results” *2026 IEEE Texas Power and Energy Conference (TPEC)*, Feb. 2026
- [C13] **S. Kunkolienkar**, J. Snodgrass, A. Birchfield, T. J. Overbye. “Modeling Electric Grid Topology with Spatially-Aware Degree-Corrected Stochastic Block Model.” *59th Hawaii International Conference on System Sciences (HICSS)*, Jan. 2026
- [C12] K. Zhgun, **S. Kunkolienkar**, F. Safdarian, T.J. Overbye, J. Weber. “Improving Power Flow Convergence By Leveraging Region of Attraction Visualization.” *2025 North American Power Symposium (NAPS)*, Oct. 2025
- [C11] **S. Kunkolienkar**, T. Overbye, G. Cabrera, H. Li, “Study Area Selection Tool to Enhance System Impact Analysis of Generator Interconnections,” *2025 IEEE Texas Power and Energy Conference (TPEC)*, Feb. 2025
- [C10] **S. Kunkolienkar**, N. Slavchev, F. Safdarian, T. Overbye, “Developing a Dashboard To Enhance Visualization of Similar Historical Weather Patterns and Renewable Energy Generation,” *2024 IEEE Workshop on Energy Data Visualization (EnergyVis)*, Oct. 2024
- [C9] **S. Kunkolienkar**, J. Cook, T. Overbye, “Visualizing Volt-Var Distributions in Large-Scale Electric Grid Models,” *2024 56th North American Power Symposium (NAPS)*, Oct. 2024
- [C8] F. Safdarian, **S. Kunkolienkar**, J. Snodgrass, A. Birchfield, T. Overbye, “Creating a Portfolio of Large-Scale, High-Quality Synthetic Grids: A Case Study,” *IEEE Kansas Power and Energy Conference 2024*, Apr. 2024
- [C7] **S. Kunkolienkar**, F. Safdarian, J. Snodgrass, A. Birchfield, T. Overbye, “A Description of the Texas A&M University Electric Grid Test Case Repository for Power System Studies,” *2024 IEEE Texas Power and Energy Conference*, College Station, TX, Feb. 2024
- [C6] T.J. Overbye, **S. Kunkolienkar**, F. Safdarian, A. Birchfield, “On the Existence of Dominant Inter-Area Oscillation Modes in the North American Eastern Interconnect Stability Simulations,” *57th Hawaii International Conference on System Sciences*, Honolulu, HI, Jan. 2024
- [C5] E. Ekeruche, **S. Kunkolienkar**, J. Snodgrass, T.J. Overbye, “Undergraduate Research on Improving Power Grid Planning Models”, *IEEE 2023 North American Power Symposium*, Asheville, NC, Oct. 2023
- [C4] F. A. Fru, S. C. Peres, T. Overbye, W. Jang, J. Chen, H. Mbayed, E. Keller, J. J. K, **S. Kunkolienkar**, and K. Ivey, “Pedagogical Application of Visualization and Eye Tracking For Electrical Grid Management,” *International Conference on Applied Human Factors and Ergonomics (AHFE)*, San Francisco, CA, Jul. 2023
- [C3] **S. Kunkolienkar**, F. Safdarian, J. Snodgrass, T. J. Overbye, “Creating Active and Reactive Power Reserve Zones for Large-Scale Electric Grids,” *Kansas Power and Energy Conference 2023*, Virtual, Apr. 2023
- [C2] **S. Kunkolienkar**, F. Safdarian, J. Snodgrass, T. J. Overbye, “Quantification of Area Sparsity in Large-Scale Electric Grids,” *Kansas Power and Energy Conference 2023*, Virtual, Apr. 2023
- [C1] J. Snodgrass, **S. Kunkolienkar**, U. Habiba, Y. Liu, M. Stevens, F. Safdarian, T. J. Overbye, R. Korab, “Case Study of Enhancing the MATPOWER Polish Electric Grid” *2022 IEEE Texas Power and Energy Conference*, College Station, TX, Feb. 2022

Honors and Awards

- Research Travel and Presentation Award (RAP), Graduate and Professional School, Texas A&M University, 2025
- Graduate Student Travel Grant, ECEN Department, Texas A&M University, 2025
- Thomas W. Powell '62 and Powell Industries Inc. Fellowship, 2025
- Best Intern Presentation on “Improving for Tomorrow” and \$1k Scholarship, EPE, 2023
- Department of Electrical and Computer Engineering Scholarship, Texas A&M University, 2021

Seminars

- “Study Area Selection Tool Improves Generator Interconnection Analysis,” EPG Seminar, Feb. 2025
- “Area Sparsity in Large-Scale Electric Grids and its Impact on Power System Sparse Matrix Statistics,” EPG Seminar, Nov. 2023

Reviewing Activities

- Reviewer, IEEE Texas Power and Energy Conference
- Reviewer, IEEE North American Power Symposium
- Reviewer, IEEE Industry Applications Society
- Reviewer, IEEE Kansas Power and Energy Conference

Conference Leadership

- Committee Volunteer for the Texas Power and Energy Conference, 2025
- Co-director of the Texas Power and Energy Conference, 2024
- Logistics Executive for Grad Camp, Graduate and Professional Student Government, 2024
- Logistics Chair of the Texas Power and Energy Conference, 2023
- Technical Chair of the Texas Power and Energy Conference, 2022

Professional Memberships and Activities

- IEEE, Graduate Student Member, January 2021–Present
- IEEE Power and Energy Society, Graduate Student Member, January 2021–Present
- IEEE Young Professionals, Graduate Student Member, January 2021–Present
- IEEE Women in Engineering, Graduate Student Member, January 2021–Present
- IEEE PES-IAS-PELS TAMU Joint Student Chapter, General Officer, August 2022–Present