

Cameron Khanpour

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EDUCATION

Georgia Institute of Technology

Atlanta, GA

Ph.D. in Electrical and Computer Engineering

August 2024 – Present

- **Awards:** GEF Fellowship, David L. Smith, PE Memorial Scholarship.
- **Relevant coursework:** Power System Operation and Control, Statistical Machine Learning, Probabilistic Graphical Models in ML, High Dimensional Statistics and Optimization, Global Optimization.

Georgia Institute of Technology

Atlanta, GA

Master of Science in Mathematics

August 2025 – Expected December 2026

Georgia Institute of Technology

Atlanta, GA

Bachelor of Science in Electrical Engineering

Graduated December 2022

EXPERIENCE

Sandia National Laboratories

Albuquerque, NM

Graduate Research Assistant, Discrete Math and Optimization

August 2024 – Present

- Implemented AC and DC Optimal Power Flow (OPF) formulations in Pyomo grid expansion repository to evaluate contingency performance and compare with existing implementation.

Southern Nuclear Operating Company

Birmingham, AL

Electrical Design Engineer, Nuclear Fleet Central Electrical/Digital Design

January 2023 – August 2024

- Modeled electrical system of Georgia and Alabama nuclear power plants in ETAP to analyze power flow and short circuit conditions for electrical design projects.
- Developed and updated design standards and calculations for protection and coordination across the nuclear fleet.
- Authored and secured a \$220,000 grant to develop new design methodology for arc flash analysis based on updated IEEE 1584-2018 standard. This methodology is now considered industry best practice.

School of ECE, Georgia Institute of Technology

Atlanta, GA

Undergraduate Teaching Assistant, ECE 2031 (Digital Design Laboratory)

August 2022 – December 2022

- Handled digital design laboratory classes for 60 undergraduate students.
- Assisted students in building basic digital and analog circuits.
- Designed, proctored, and graded all quizzes and lab reports.

Enercon Services, Inc.

Kennesaw, GA

Electrical Engineering Intern, Electrical Analysis Group

May 2021 – August 2022

- Performed optimal power flow (OPF) and dynamic analysis in PowerWorld for transmission systems.
- Modeled control system diagrams (CSDs) with battery devices for Millstone and Peach Bottom nuclear plants.
- Programmed automated functions and reports for voltage drop cable ampacity analysis in Python.

PUBLICATIONS († → EQUAL CONTRIBUTION)

- **C. Khanpour** and S. Talkington, “Proving the Limits of Quantum Power Flow,” *arXiv preprint* arXiv:2607.19263.
- **C. Khanpour**, S. Talkington, M. Dahan, and D.K. Molzahn, “Zero-Sum Power Factor Games,” *arXiv preprint* arXiv:2608.20298.
- **C. Khanpour**, D. Turizo, S. Talkington, “Making Every Bit Count for A-Optimal State Estimation,” to appear at the *65th IEEE Conference on Decision and Control (CDC) 2026*, December 15-18, 2026.
- S. Talkington[†], **C. Khanpour**[†], et al., “Admittance Matrix Concentration Inequalities for Understanding Uncertain Power Networks,” to appear at the *1st PowerUp Conference 2026*, September 9-11, 2026.
- **C. Khanpour**, J. Kyle Skolfield, and D.K. Molzahn, “Empirical Comparison of AC and DC Power Flow Models in Transmission Expansion Planning,” *10th Texas Power and Energy Conference (TPEC)*, February 8-10, 2026.

PREPRINTS

- **C. Khanpour** and J.T. Fontejon, “Exploring the Use of Contingency for Nuclear Electrical Studies,” *arXiv preprint* arXiv:2409.14320.
- **C. Khanpour**, “Quantitative and Qualitative Evaluation of NLM and Wavelet Methods in Image Enhancement,” *arXiv preprint* arXiv:2409.14334.

INVITED PRESENTATIONS

- Exploring the Impacts of Model Fidelity in Expansion Planning** Edinburgh, Scotland
SIAM Conference on Optimization (OP26) June 2026
- Presented empirical results from TPEC 2026 publication.
- Empirical Comparison of AC and DC Models in Expansion Planning** College Station, TX
10th Texas Power and Energy Conference (TPEC) 2026 February 2026
- Presented an empirical comparison of nonlinear AC and linearized DC power flow models in MINLP/MILP transmission expansion planning using the IDAES-GTEP framework.
 - Demonstrated that AC and DC formulations produced nearly identical investment costs in typical grids, even when extreme resistance and reactive power variations led to different integer transmission investment decisions.
- Exploring the Use of Contingency for Nuclear Electrical Studies** Irvine, CA
ETAP Nuclear Utility Users Conference June 2024
- Presented research showcasing the potential use case of real-time analysis of nuclear electrical systems and its application to streamline the design process to top industry leaders.
- Evaluation of NLM and Wavelet Methods in Image Enhancement** Atlanta, GA
Georgia Tech Center for Signal and Information Processing (CSIP) Seminar February 2024
- Presented a poster on the effects of different image processing techniques on new data sets for object detection.
- Building Resiliency in a Changing World – Nuclear Plant Reliability** Marco Island, FL
American Nuclear Society (ANS) Annual Utility Working Conference August 2023
- Knowledge Manager for the Plant Reliability track and spoke on future trends of the nuclear industry.
 - Advocated for an increase of renewable and nuclear energy to top utility industry leaders.

LEADERSHIP

- Electrical and Computer Engineering Graduate Student Organization**
Executive Board Member: Mentorship Chair August 2024 – Present
- Led professional development programs for undergraduate and graduate students and organized social events to foster a sense of community among the students.
 - Organized events such as “Grad School: To Be or Not To Be?” and “ECE Research Rally.”
- IEEE PES Vice Chair**
Vice Chair August 2024 – Present
- Provided mentorship for undergraduates on research and career opportunities in the power industry.
 - Organized spring get-aways and fire side chats for PES graduate students.

SERVICE, HONORS, & CERTIFICATIONS

- Reviewer for:
 - IEEE Transactions on Power Systems (TPWRS)
 - Electric Power Systems Research (EPSR)
 - IEEE 2026 SmartGridComm
 - IEEE 2025 Texas Power and Energy Conference (TPEC)
 - IEEE 2025 Power and Energy Conference at Illinois (PECI)
- Top Honors in Multidisciplinary Achievement, American Society for Engineering and Education (ASEE) Conference
- American Nuclear Society (ANS) Knowledge Manager Award
- Systems Training Certification at Farley Nuclear Plant
- EIT Certification with Alabama Board of Engineers and Land Surveyors
- NCEES Principles and Practices of Engineering (PE) exam passed

SKILLS

Technical Skills: Python, Julia, MATLAB, C++, ETAP, PowerWorld, WinIGS, L^AT_EX, MS Office Suite.
Soft Skills: Public Speaking, Leadership, Time management, Problem solving, Conflict Resolution, Critical thinking.

INTERESTS

Clubs and Societies: ECE Graduate Students’ Organization, Persian-American Resource Society, Yellow Jacket Fencing Club, IEEE Power and Energy Society, American Nuclear Society.
Activities: Fencing, Comedy, Community engagement, and volunteering.