# Samuel Talkington

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samueltalkington.com

## Education

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|---|---|
| 2020–26 | **Georgia Institute of Technology** |
| | Ph.D. Electrical and Computer Engineering |
| 2016–20 | **West Virginia University** |
| | B.S. Electrical Engineering, *summa cum laude*, minor in Chinese |

## Research Experience

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|---|---|
| 2020– | Graduate Research Assistant, Georgia Institute of Technology, (Advisor: Dr. Daniel K. Molzahn) |
| 2022 | Graduate Research Intern, Lawrence Livermore National Laboratory, (Host: Colin Ponce, Cyber and Infrastructure Resilience Program) |
| 2018–2020 | Undergraduate Research Assistant, West Virginia University, (Advisors: Dr. Sarika Khushalani Solanki, Dr. Natalia Schmid) |

## Awards & Honors

| | |
|---|---|
| 2025 | Georgia Tech Schmidt Science Fellows Nominee |
| 2025 | NextProf Nexus Future Faculty Workshop Invitee |
| 2025 | Georgia Tech Student Recognition for Excellence in Teaching: Annual CIOS Award |
| 2025 | Georgia Tech Course Instructor Opinion Survey (CIOS) Fall 2024 Honor Roll |
| 2024 | Georgia Tech ECE Supporting Teaching Experience Fellowship |
| 2023 | National Science Foundation Power and Energy Conference Travel Grant |
| 2022 | National Science Foundation Graduate Research Fellowship |
| 2021 | Georgia Tech Strategic Energy Institute/EPICenter Spark Award |
| 2021 | IEEE Power and Energy Conference at Illinois Best Paper Award |
| 2021 | U.S. Department of Energy Solar District Cup, Second Place |
| 2020 | Georgia Tech School of ECE Alek and Halina Szalm Fellowship |
| 2020 | U.S. Department of Energy Solar District Cup, Second Place |
| 2019 | West Virginia University Honors EXCEL Student Research Proposal Grant |
| 2019 | U.S. Department of Energy Solar Decathlon Design Challenge, Finalist |
| 2016 | West Virginia University President's, Engineering Excellence, and other scholarships |
| 2016 | U.S. Department of State National Security Language Initiative (program info) |

# Publications

† → Equal contribution
★ → Supplemental information

## Preprints

[S1]    **S. Talkington**, A. Rangarajan, P. A. Alcântara, L. Roald, D. K. Molzahn, and D. Fuhrmann, *Error Bounds for Radial Network Topology Learning from Quantized Measurements*, submitted, Aug. 2025. arXiv: 2508.05620 [eess.SY].

[S2]    **S. Talkington** and D. K. Molzahn, *VARsity: Can Language Models Keep Power Engineering Students in Phase?* submitted, Jul. 2025. arXiv: 2507.20995 [cs.CY].

[S3]    B. Ashebo, **S. Talkington**, S. Zonouz, and D. K. Molzahn, *Covert Distribution Load Tripping Attacks*, submitted, Jun. 2025, eprint available.

## Journal Articles

[J1]    P. Buason, S. Misra, **S. Talkington**, and D. K. Molzahn, "A Data-Driven Method for Locating Sensors and Selecting Alarm Thresholds to Identify Violations of Voltage Limits in Distribution Systems," *Electric Power Systems Research*, vol. 232, no. 110387, Jul. 2024. DOI: 10.1016/j.epsr.2024.110387.

[J2]    **S. Talkington**, S. Grijalva, M. J. Reno, J. A. Azzolini, and J. Peppanen, "Localized Structure in Secondary Distribution System Voltage Sensitivity Matrices," *Electric Power Systems Research*, vol. 226, p. 109 788, Jan. 2024. DOI: 10.1016/j.epsr.2023.109788.

[J3]    **S. Talkington**, D. Turizo, S. Grijalva, J. Fernandez, and D. Molzahn, "Conditions for Estimation of Sensitivities of Voltage Magnitudes to Complex Power Injections," *IEEE Transactions on Power Systems*, vol. 39, no. 1, pp. 478–491, Jan. 2024. DOI: 10.1109/TPWRS.2023.3237505.

[J4]    **S. Talkington**, S. Grijalva, M. J. Reno, and J. A. Azzolini, "Solar PV Inverter Reactive Power Disaggregation and Control Setting Estimation," *IEEE Transactions on Power Systems*, vol. 37, no. 6, pp. 4773–4784, Jan. 2022. DOI: 10.1109/TPWRS.2022.3144676.

[J5]    **S. Talkington**, S. Grijalva, M. J. Reno, J. A. Azzolini, and D. Pinney, "A Measurement-Based Approach to Voltage-Constrained Hosting Capacity Analysis with Controllable Reactive Power Behind-the-Meter," *Electric Power Systems Research*, vol. 221, no. 109395, Aug. 2023. DOI: 10.1016/j.epsr.2023.109395.

[J6]    **S. Talkington**, S. Grijalva, and M. J. Reno, "Power Factor Estimation of Distributed Energy Resources Using Voltage Magnitude Measurements," *Journal of Modern Power Systems and Clean Energy*, vol. 9, no. 4, pp. 859–869, 2021. DOI: 10.35833/MPCE.2021.000086.

## Conference Proceedings

[C1]    R. Asiamah, **S. Talkington**, M. A. Boateng, M. Vanin, F. Geth, and D. K. Molzahn, "Classifying Reactive Power Control Laws of Behind-the-Meter Solar Photovoltaic Inverters," in *2025 IEEE Kansas Power and Energy Conference (KPEC)*, Apr. 2025.

[C2]    **S. Talkington**, R. Gupta, R. Asiamah, P. Buason, and D. K. Molzahn, "Strategic Electric Distribution Network Sensing via Spectral Bandits," in *63rd IEEE Conference on Decision and Control (CDC)*, Dec. 2024.

[C3] **S. Talkington**[†], A. West[†], and R. Haider, "Locational Marginal Burden: Quantifying the Equity of Optimal Power Flow Solutions," in *Proceedings of the 15th ACM International Conference on Future and Sustainable Energy Systems*, ser. e-Energy '24, Singapore, Singapore: Association for Computing Machinery, Jun. 2024, pp. 97–107. DOI: 10.1145/3632775.3661947.

[C4] A. D. Aquino, **S. Talkington**, and D. K. Molzahn, "Managing Vehicle Charging During Emergencies via Conservative Distribution System Modeling," in *2024 IEEE Texas Power and Energy Conference (TPEC)*, Mar. 2024, pp. 1–6. DOI: 10.1109/TPEC60005.2024.10472235.

[C5] **S. Talkington** and S. Grijalva, "Phase Retrieval via Model-Free Power Flow Jacobian Recovery," in *Proceedings of the 14th ACM International Conference on Future Energy Systems*, ser. e-Energy '23, Orlando, FL, USA: Association for Computing Machinery, Jun. 2023, pp. 510–523. DOI: 10.1145/3575813.3597357.

[C6] J. A. Azzolini, M. J. Reno, J. Yusuf, **S. Talkington**, and S. Grijalva, "Calculating PV Hosting Capacity in Low-Voltage Secondary Networks Using Only Smart Meter Data," in *2023 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)*, Mar. 2023, pp. 1–5. DOI: 10.1109/ISGT51731.2023.10066372.

[C7] J. A. Azzolini, **S. Talkington**, M. J. Reno, S. Grijalva, L. Blakely, D. Pinney, and S. McHann, "Improving Behind-the-Meter PV Impact Studies with Data-Driven Modeling and Analysis," in *2022 IEEE 49th Photovoltaics Specialists Conference (PVSC)*, Nov. 2022, pp. 204–204. DOI: 10.1109/PVSC48317.2022.9938462,
★ *Selected for Oral Presentation.*

[C8] **S. Talkington**, S. Grijalva, and M. J. Reno, "Sparse Time Series Sampling for Recovery of Behind-the-Meter Inverter Control Models," in *2022 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)*, Jul. 2022, pp. 1–5. DOI: 10.1109/ISGT50606.2022.9817504.

[C9] **S. Talkington**, S. Grijalva, M. J. Reno, and J. Azzolini, "Recovering Power Factor Control Settings of Solar PV Inverters from Net Load Data," in *2021 North American Power Symposium (NAPS)*, Nov. 2021, pp. 1–6. DOI: 10.1109/NAPS52732.2021.9654671.

[C10] **S. Talkington** and S. Grijalva, "Rail Transit Regenerative Braking Energy Recovery Optimization to Provide Grid Services," in *2021 IEEE Power and Energy Conference at Illinois (PECI)*, May 2021, pp. 1–7. DOI: 10.1109/PECI51586.2021.9435279,
★ *Best Paper Award.*

## Technical Reports

[TR1] J. Ero, K. Slatterly, X. Qin, **S. Talkington**, and D. K. Molzahn, *Optimizing State Estimation Error in the LinDist3Flow Model*, IEEE Opportunity Research Scholars' Undergraduate Research Symposium, 2025.

[TR2] M. J. Reno, L. Blakely, R. D. Trevizan, B. Pena, M. Lave, J. A. Azzolini, J. Yusuf, C. B. Jones, A. F. Bastos, R. Chalamala, *et al.*, *IMoFi - Intelligent Model Fidelity: Physics-Based Data-Driven Grid Modeling to Accelerate Accurate PV Integration (Final Report)*, Sandia National Lab. (SNL-NM), Albuquerque, NM (United States), Jan. 2022. DOI: 10.2172/1855058. [Online]. Available: https://www.osti.gov/biblio/1855058.

[TR3]  M. J. Reno, L. Blakely, R. D. Trevizan, B. Pena, M. Lave, J. A. Azzolini, J. Yusuf, C. B. Jones, A. Furlani-Bastos, R. Chalamala, *et al.*, *IMoFi (Intelligent Model Fidelity): Physics-Based Data-Driven Grid Modeling to Accelerate Accurate PV Integration Updated Accomplishments*, Sandia National Lab. (SNL-NM), Albuquerque, NM (United States), Sep. 2022. DOI: 10.2172/1888157. [Online]. Available: https://www.osti.gov/biblio/1888157.

# Presentations

♯ → Indicates presenter(s) when there are multiple authors

## Talks

[T1]  **S. Talkington**♯, A. West, R. Piansky, R. Haider, and D. K. Molzahn, *Embedding Affordability Goals into Grid Planning via Differentiable Optimization*, 2025 INFORMS Annual Meeting (Atlanta, GA), Oct. 2025.

[T2]  **S. Talkington**, *Randomness as a Resource: Scalable Algorithms for Grid Decision-Making*, Power and AI Initiative (PAI) Seminar Series, Harvard School of Engineering and Applied Sciences, (Allston, MA), Aug. 2025.

[T3]  C. Khanpour♯, D. Turizo, **S. Talkington**, and D. K. Molzahn, *A Procedure to Assess Nonconvexity via Shortest Feasible Paths*, SIAM Conference on Applied Algebraic Geometry, University of Wisconsin-Madison, (Madison, WI), Jul. 2025.

[T4]  **S. Talkington**, *High-Dimensional Statistics for Electric Power Systems*, NSF AI Institute for Advances in Optimization Spring 2025 Three-Minute Thesis (3MT) (Atlanta, GA), Apr. 2025,
★ Presentation Slides.

[T5]  **S. Talkington**, *High-Dimensional Statistics for Electric Power Systems*, 2025 Georgia Tech ECE Research Rally (Atlanta, GA), Apr. 2025.

[T6]  **S. Talkington**, *High-Dimensional Statistics for Electric Power Systems*, Gridmatic Lunch and Nerd, Invited (Online), Mar. 2025.

[T7]  A. West♯, **S. Talkington**, and R. Haider, *Locational Marginal Burden: Equity Embedded in the Optimal Power Flow*, 2024 INFORMS Annual Meeting (Seattle, WA), Oct. 2024,
★ Presentation Slides.

[T8]  **S. Talkington**♯, A. West, and R. Haider, *Locational Marginal Burden: Quantifying the Equity of Optimal Power Flow Solutions*, The 15th ACM International Conference on Future Energy Systems (Singapore), Jun. 2024,
★ Presentation Video.

[T9]  **S. Talkington**, *Electric Distribution Network Sensing with Limited Communication Infrastructure*, 2024 Georgia Tech ECE Research Rally (Atlanta, GA), Apr. 2024,
★ Presentation Video.

[T10]  A. D. Aquino, **S. Talkington**♯, and D. K. Molzahn, *Managing Vehicle Charging During Emergencies via Conservative Distribution System Modeling*, 2024 IEEE Texas Power and Energy Conference (College Station, TX), Feb. 2024.

[T11]  **S. Talkington**, *Complex Power Inverse Problems*, ACM SIGEnergy Graduate Student Seminar Series (Online), Aug. 2023,
★ Presentation Slides.

[T12] **S. Talkington**[♯] and S. Grijalva, *Phase Retrieval via Model-Free Power Flow Jacobian Recovery*, The 14th ACM International Conference on Future Energy Systems (Orlando, FL), Jun. 2023,
★ Presentation Slides.

[T13] **S. Talkington**[♯], S. Grijalva, M. J. Reno, and J. A. Azzolini, *Recovering Behind-the-Meter Power Factor Control Settings of Solar PV Inverters from Net Load Data*, 2021 North American Power Symposium (NAPS 2021) (College Station, TX), Nov. 2021,
★ Presentation Slides.

[T14] A. Fan[♯], K. Kang, J. Churchill, M. Warner, **S. Talkington**, T. Pilet, and D. K. Molzahn, *Solar PV and Storage Integration for the Denver, CO and Auraria, CO Higher Education Center*, U.S. Department of Energy Solar District Cup Finalist Presentation (Virtual), Apr. 2021,
★ Presentation Video.

[T15] **S. Talkington**[♯], J. T. Tanner[♯], M. Kashon[♯], J. W. Gain[♯], and S. K. Solanki, *Solar PV and Storage Integration for New Mexico State University*, U.S. Department of Energy Solar District Cup Finalist Presentation (Virtual), Apr. 2020,
★ Presentation Video.

[T16] **S. Talkington**[♯], J. T. Tanner, J. Bauer[♯], J. Turner[♯], L. Yost[♯], J. Yaeger, D. Korakakis, and C. Haddox, *Victorian Net-Zero Energy Home for Morgantown, West Virginia*, U.S. Department of Energy Solar Decathlon Design Challenge Finalist Presentation, National Renewable Energy Laboratory, (Golden, CO), Apr. 2019.

## Posters

[P1] **S. Talkington**[♯], A. West, R. Haider, and D. K. Molzahn, *Electricity Market Regulation via Differentiable Optimization*, NSF AI Institute for Advances in Optimization Spring 2025 Retreat (Atlanta, GA), Mar. 2025.

[P2] **S. Talkington**, *Randomized Algorithms for Infrastructure Networks*, Meet the Faculty Candidates Poster Session, 63rd IEEE Conference on Decision and Control (Milan, Italy), Dec. 2024.

[P3] **S. Talkington**[♯], R. Gupta, and D. K. Molzahn, *Sample Complexity of Distribution Network Sensing*, Winter 2024 PSERC Industrial Advisory Board (IAB) Meeting, Arizona State University (Tempe, AZ), Dec. 2024.

[P4] **S. Talkington**[♯], R. Gupta, R. Asiamah, P. Buason, and D. K. Molzahn, *Strategic Electric Distribution Network Sensing*, Spring 2024 PSERC Industrial Advisory Board (IAB) Meeting, Cornell University (Ithaca, NY), May 2024.

[P5] R. Asiamah[♯], **S. Talkington**[♯], R. Gupta, and D. K. Molzahn, *Smart Meter-Driven Distribution Grid Visibility and Control*, Winter 2023 PSERC Industrial Advisory Board (IAB) Meeting, Georgia Tech (Atlanta, GA), Dec. 2023.

[P6] **S. Talkington**[♯], S. Grijalva, and M. J. Reno, *Sparse Time Series Sampling for Recovery of Behind-the-Meter Inverter Control Models*, 2022 PES Innovative Smart Grid Technologies Conference, NA, (New Orleans, LA), Apr. 2022.

[P7] D. Foual[♯], N. A. Schmid, and **S. Talkington**, *Camera Authentication Based on a Gaussian Model for PRNU and a GLRT Detection Rule*, West Virginia University Undergraduate Research Symposium (Morgantown, WV, USA), Nov. 2020,
★ Presentation Video.

[P8] **S. Talkington**[♯] and N. A. Schmid, *Digital Forensics for Iris Image Spoof Detection*, Undergraduate Research Day at the West Virginia State Capitol (URDC) (Charleston, WV, USA), Feb. 2020.

# Teaching

## Certificate

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|---|---|
| 2025 | CIRTL Associate Certificate, Tech to Teaching Program (Program Info) |

## Georgia Institute of Technology

### Roles and courses taught

| | |
|---|---|
| 2025 | Co-Instructor, Power System Analysis & Control (ECE 4320, 29 students) |
| 2025 | Scribe, Special Topics on Mathematical Data Science (ISYE 8803, 9 students) |
| 2024 | Instructor of Record★, Digital System Design (ECE 2020-IE, 50 students) |

★**Student Recognition of Excellence in Teaching: Class of 1938 Teaching Award**
★**Instructor evaluations (88% response rate):**

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|---|---|
| Overall Effectiveness: | 4.92/5.00 |
| Feedback Helpfulness: | 4.94/5.00 |
| Enthusiasm: | 4.97/5.00 |
| Stimulates Interest: | 4.85/5.00 |
| Inclusiveness: | 4.99/5.00 |
| Respect for Students: | 4.99/5.00 |

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| 2022 | Guest Lecturer, Power System Control & Operation (ECE 6320, 20 students) |

## West Virginia University

### Roles and courses taught

| | |
|---|---|
| 2018–2019 | Statler College Peer Tutor, Introduction to Electrical Engineering (EE 221) |
| 2018–2019 | Statler College Peer Tutor, Electrical Circuits (EE 223) |
| 2018–2019 | Statler College Peer Tutor, General Physics 2 (PHYS 112) |
| 2018–2019 | Statler College Peer Tutor, Multivariable Calculus (MATH 157) |
| 2017–2018 | Undergraduate Teaching Assistant, Calculus 1 (MATH 155) |
| 2017–2018 | Undergraduate Teaching Assistant, Business Calculus (MATH 150) |
| 2017–2018 | Undergraduate Teaching Assistant, College Algebra (MATH 128) |
| 2017–2018 | Undergraduate Teaching Assistant, Concepts of Mathematics (MATH 120) |

# Mentorship and Advising

## Peer mentorship

| | |
|---|---|
| 2024 | Cameron Khanpour, Georgia Tech, Ph.D. ECE. |
| 2024 | Betelihem Kebebe Ashebo, Georgia Tech, Ph.D. ECE. Mentored on project that led to [S3]. |
| 2022 | Richard Asiamah, Georgia Tech, Ph.D. ECE. Mentored with the Georgia Tech ECE Graduate Student Organization Mentorship program, and on projects that led to [C1], [C2], [P4]. |

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|---|---|
| 2019 | Dana Foual, West Virginia University, B.S. CS 2022, M.S. CS 2024. Mentored on project that led to a research symposium poster [P7]. |

## Formal advising

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| 2024 | Xianhe (Ken) Qin, B.S. ECE, Georgia Tech. *Project: Algorithms for Distribution Grid State Estimation*, led to symposium paper [TR1]. |
| 2024 | Jeslyn Ero, B.S. ECE, Georgia Tech. *Project: Algorithms for Distribution Grid State Estimation*, led to symposium paper [TR1]. |
| 2024 | Kieran Slattery, B.S. ECE, Georgia Tech. *Project: Algorithms for Distribution Grid State Estimation*, led to symposium paper [TR1]. |
| 2020 | Katie Kang, B.S. ChemE, Georgia Tech, now R&D Engineer, PepsiCo. *Project: 2021 U.S. Department of Energy Solar District Cup*, led to second place win [T14]. |
| 2020 | Austin Fan, B.S. ChemE, Georgia Tech, now Ph.D. student, Princeton University. *Project: 2021 U.S. Department of Energy Solar District Cup*, led to second place win [T14]. |

# Media Mentions

| | |
|---|---|
| 2025 | Georgia Tech School of Electrical and Computer Engineering News, Nine ECE Instructors Receive Fall 2024 Course Instructor Opinion Survey Honors |
| 2022 | The Bridge, 2022 Issue 1 Volume 118, Samuel Talkington: IEEE-Eta Kappa Nu Graduate Research Spotlight |
| 2021 | Georgia Tech School of Electrical and Computer Engineering News, GT Students Place Second in US DOE Solar District Cup |
| 2021 | Georgia Tech School of Electrical and Computer Engineering News, Talkington Selected for PECI 2021 Best Paper Award |
| 2020 | The Exponent Telegram (West Virginia Newspaper), Bridgeport, West Virginia's Samuel Talkington exploring niche research during Ph.D. program at Georgia Tech |
| 2020 | The Exponent Telegram (West Virginia Newspaper), West Virginia University team, including a Bridgeport graduate, among top Solar District Cup teams |

# Service

## Journal Refereeing

| | |
|---|---|
| 2023, 24, 25 | IEEE Transactions on Power Systems |
| 2023, 24 | IEEE Transaction on Smart Grid |
| 2023, 24 | Electric Power Systems Research |
| 2023 | Measurement (Elsevier) |

## Conference Refereeing

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|---|---|
| 2024 | Power System Computation Conference (PSCC) |

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| 2022, 23, 24 | IEEE Conference on Decision and Control (CDC) |
| 2024, 25 | IEEE Conference on Control Technology and Applications (CCTA) |
| 2022, 23, 24 | IEEE PES Innovative Smart Grid Technologies Conference (ISGT) |
| 2024 | IEEE PES Transmission and Distribution Conference (T&D) |
| 2022, 23 | IEEE PES General Meeting (PESGM) |
| 2021 | IEEE Power and Energy Conference at Illinois (PECI) |

## Departmental Service (Georgia Tech)

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|---|---|
| 2024– | Ph.D. mentor, Opportunity Research Scholars' (ORS) undergraduate research program. |
| 2023 | Student panel member, School of ECE Industrial Advisory Board |
| 2022– | Peer mentor, ECE Graduate Student Organization (GSO) Mentorship Program |
| 2021– | Annual volunteer in various panels, tours, and activities for ECE Ph.D. admissions |
| 2020– | Energy Club at Georgia Tech (VP of Operations 2021, Member 2020–) |
| 2021–2023 | "Power Buddy" graduate student mentor, IEEE Power and Energy Society (PES) |

## Departmental Service (West Virginia University)

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|---|---|
| 2019–2020 | Chapter President, IEEE-Eta Kappa Nu Beta Rho Chapter |
| 2019—2020 | Student Advisory Council, Lane Department of CSEE |
| 2018—2020 | Student Advisory Council, Statler College of Engineering |
| 2018—2020 | Statler College Ambassador, Statler College of Engineering |
| 2018—2019 | DiscoverWVU outreach events for West Virginia high school students |
| 2018—2019 | SheCanCode coding bootcamps for West Virginia high school students |
| 2018—2019 | EngineerFest outreach events for first-year engineering students |
| 2018—2019 | DecideWVU outreach event weekends for undeclared/undecided admitted students |
| 2017–2019 | Outreach Coordinator and Webmaster, IEEE West Virginia University Chapter |

## Extramural Service

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|---|---|
| 2025 | Student volunteer at the 2025 INFORMS Annual Meeting |
| 2025–2027 | IEEE Task Force on Benchmarking Multiconductor OPF for Distribution Systems |
| 2025 | Cristo Rey Atlanta Jesuit High School, Volunteer, STEM Tutor. |
| 2021 | Georgia Tech Southeastern Energy Conference (SEEC), Advertising Chair, Research Chair |
| 2018—2020 | IEEE Region 2, Pittsburgh Section Student Representative |
| 2018—2019 | IEEE Region 2 Student Activities Conference, Sponsorship Chair, Executive Board Member |
| | *Team raised approximately $10,000 from industry sponsors.* |
| | *Co-authored successful proposal to host IEEE SAC 2019 at West Virginia University, attended by > 300 students.* |

## Membership in Professional Organizations

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|---|---|
| 2025 | Georgia Tech Energy, Policy, and Innovation Center Student Affilitate |
| 2023 | ACM; ACM SIGEnergy |
| 2023 | ASA; ASA Georgia Chapter |

| 2018 | Eta Kappa Nu |
| 2018 | Tau Beta Pi |
| 2017 | IEEE; IEEE Power and Energy Society |

## Industry Experience

| 2020 | Power Controls R&D Intern, Mitsubishi Electric Power Products—Warrendale, PA. (Contributed hardware and software designs and conducted laboratory testing for the development of a static synchronous compensator/Volt-VAR control product.) |
| 2019 | Power System Studies Intern Mitsubishi Electric Power Products—Warrendale, PA. (Conducted electromagnetic transient overvoltage studies for consulting projects pertaining to electric power substation planning and operation.) |

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Last updated: August 12, 2025