Sagnika Ghosh

2622 Pennington Ave, Unit C, Nashville, TN 37216
(573) 202-9619
sghosh1@tnstate.edu

Research Interests	Renewable Energy Systems, Distributed Energy Resources, Power System Control, Power Electronics, Smart Grid and Micro-Grid Systems, Smart Micro-grid Control, Cyber Security of Smart Micro-grid, Dynamic Vehicle Charging, Cyber-Physical Systems, Power Systems, Power Quality Enhancement Methods of Hybrid Power Systems, Energy Storage Systems, Power Quality, and Power System Stability.

Education

University of Memphis, Memphis, TN, USA

PhD Electrical and Computer Engineering, August 2018

Advisor: Dr. Mohd. Hasan Ali

Dissertation: Power Quality Enhancement of Modern Power Grid considering Time Delays and Cyber- Attacks

University of Memphis, Memphis, TN, USA

M.S. Electrical and Computer Engineering, May 2013

Advisor and Committee Chair: Dr. Mohd. Hasan Ali

Thesis: Power Quality Enhancement Through Optimal Reclosing of Circuit Breakers and Thyristor Controlled Capacitor

West Bengal University of Technology, India

Bachelor of Technology, June 2010

Major: Electrical Engineering

Advisor: Debadyuti Banerjee

Project: Design of an Automatic Light Switch

Employment

Associate Professor   August 2025- Present

Tennessee State University

Assistant Professor   January 2020- July 2025

Tennessee State University

Assistant Professor   August 2018- December 2019

Indiana Institute of Technology

Instructor   September 2014- December 2016

Southwest Tennessee Community College

Program Analyst Trainee   April 2011- August 2011

Cognizant Technology Solutions, India

Electrical Design Trainee   September 2010- March 2011

TIL India Ltd, India

Projects

1) DOE HBCU Clean Energy Academy, [March 2024-December 2027]
2) Breaking Barriers to Enable Solar Technology Circularity (BBEST Circularity), [November 2024-October 2029].

3) PV and Energy storage Grid Operation: Open Dataset (PERIOD), [November 2024-July 2025].
4) Cyber Resilient 5G Enabled Virtual Power System for Growing Power Demand, [October 2022-September 2025].
5) Reinforcement Learning Based Smart Grid Control of an 8 MVA Microgrid Operated in Grid Tied and Islanded Modes, [May 2023-May 2024].
6) Design and Simulation of the 5G Communication Infrastructure Between Solar Micro-Inverters and SCADA System, [May 2022-October 2022].
7) Design of a Solar Energy System with Smart Controller Capable of Weather Prediction and Acting as a Virtual Power Plant (VPP), 2021-2022.
8) Dynamic Vehicle Charging System, 2021-2022.
9) Statistical Approach to Smart Grid Security, 2022.
10) Algorithm Development to Minimize Adverse Effects of Time Delays in Smart Power Grid-Discovery and Development Grant, UofM, [March 2017 to August 2018].
11) Investigating and Testing of Cybersecurity in Protective Relay System of Smart Power Distribution Grid, CAST Project- FedEx Institute of Technology [January 2017 to May 2018].
12) Exploring Cyber Security Issue and Solution for Energy Storage at Smart Microgrid System, CAST Project- FedEx Institute of Technology [January 2017 to May 2018].
13) Development of an Algorithm to Mitigate Adverse Effects of Time Delays on the Smart Grid-FedEx Institute of Technology [September 2013 to August 2014].

Teaching Experience	*Associate Professor*	August 2025- Present

Department of Electrical and Computer Engineering

Tennessee State University

- Develop and present course content along with hands-on experience with the laboratory equipment.
- Tech and supervise undergraduate and graduate students Electrical and Computer Engineering Department.
- Revise Power System Engineering curriculum to incorporate new technologies.
- Conduct research.
- Advise undergraduate students on the senior design project.
- Develop and grade the ability-appropriate homework, labs, and exams.
- Participated in Professional Development activities like attending conferences and journal submission.
- Participated as a committee chair for the Nomination and Appointment Committee at the Faculty Senate.
- Participated as a committee chair for the Academic Committee at the Faculty Senate.
- Participated as a committee member in the Faculty Senate.

Spring 2026
- EECE 3210: EM Theory
- EECE 3420: Power Systems
- ENGR 2240: Matlab programming
- EECE 4900: Professional Development
- ENGR 1020: Freshman Engineering Seminar

__Assistant Professor__   January 2020- July 2025

Department of Electrical and Computer Engineering

Tennessee State University

- Develop and present course content along with hands-on experience with the laboratory equipment.
- Tech and supervise undergraduate and graduate students Electrical and Computer Engineering Department.
- Revise Power System Engineering curriculum to incorporate new technologies.
- Conduct research.
- Advise undergraduate students on the senior design project.
- Develop and grade the ability-appropriate homework, labs, and exams.
- Participated in Professional Development activities like attending conferences and journal submission.
- Participated as a committee member in the Retention and Recruitment Committee.
- Participated as a committee member in the Faculty Senate.

__Courses Taught:__

Fall 2025

- EECE 3410: Energy Conversion
- EECE 4000: Control Systems I
- EECE 4001: Control Systems I Lab
- EECE 2200: Circuits II
- EECE 1151: Matlab Based Engr Graphics

Spring 2025

- ENGR 2001: Circuits I Lab
- EECE 3210: EM Theory
- EECE 4410: Renewable Energy
- ENGR 2240: Matlab programming

Fall 2024

- EECE 3410: Energy Conversion
- EECE 4410: Renewable Energy
- ENGR 2000: Circuits I
- ENGR 2001: Circuits I Lab
- EECE 3420: Power Systems

Spring 2024

- ENGR 4300: Engineering Economy
- ENGR 2001: Circuits I Lab
- EECE 3210: EM Theory
- ENGR 4400: Probability & Statistics

Fall 2023

- ENGR 2001: Circuits I
- EECE 2200: Circuits II

- EECE: Embedded Systems Lab

Spring 2023
- EECE 4410: Renewable Energy
- ENGR 2000: Circuits I Lab
- EECE 3210: EM Theory
- EECE 3420: Power Systems

Fall 2022
- ENGR 2001: Circuits I Lab
- EECE 3410: Energy Conversion
- ENGR 2000: Circuits I
- EECE 2200: Circuits II

Spring 2022
- ENGR 2000: Circuits I
- ENGR 2001: Circuits I Lab
- EECE 3210: EM Theory
- EECE 3420: Power Systems

Fall 2021
- EECE 3210: EM Theory
- EECE 3410: Energy Conversion
- EECE 4410: Renewable Energy
- ENGR 2000: Circuits I

Summer 2021
- EECE 4410: Renewable Energy
- EECE 3430: Power System Distribution

Spring 2021
- ENGR 2000: Circuits I
- ENGR 2001: Circuits I Lab
- EECE 3210: EM Theory
- EECE 3420: Power Systems

Fall 2020
- EECE 3210: EM Theory
- EECE 3410: Energy Conversion
- EECE 4410: Renewable Energy
- ENGR 2000: Circuits II

Spring 2020
- EECE 3210: EM Theory
- EECE 3410: Energy Conversion
- EECE 3420: Power Systems
- ENGR 4400: Probability & Statistics

Assistant Professor   August 2018- December 2019

Electrical Engineering

Department of Electrical and Computer Engineering

Indiana Institute of Technology

- Develop and present course content along with hands-on experience with the laboratory equipment.
- Tech and supervise undergraduate students Electrical Engineering Department.
- Develop and grade the ability-appropriate homework, labs, and exams.
- Participated in Professional Development activities like attending conferences and journal submissions.
- Participated in the ABET process.
- Participate in Faculty Senate meetings.
- Participated in the IRB as a team lead.
- Participated in the committee to search for a new faculty in AS EET program.

Courses (+Labs) Taught:
Fall 2018
- EE 4800: Linear Controls
- EE 3750 (AA & AB): Electronics Laboratory (2 sections)
- EE 3150: Signals and Systems

Spring 2019
- EE 3200: Electronics Circuits I
- EE 4300: Principles of Communication
- EE 3650 (AA & AB): Circuits Lab (2 sections)
- EE 4450 (AA & AB): Machines and Controls Lab (2 sections)

Fall 2019
- EE 4800: Linear Controls
- EE 3750 (AA & AB): Electronics Laboratory (2 sections)
- EE 2050: Overview of Electrical and Electronics
- EE 4450 (AA & AB): Machines and Controls Lab (2 sections)

Graduate Research Assistant   January 2017-August 2018

Department of Electrical and Computer Engineering

University of Memphis, TN

- Performed research on Delay Minimization in Hybrid Power Grid
- Investigating and Testing of Cybersecurity in Protective Relay System of Smart Power Distribution Grid.
- Exploring Cyber Security Issue and Solution for Energy Storage at Smart Microgrid System, CAST Project- FedEx Institute of Technology.
- Algorithm Development to Minimize Adverse Effects of Time Delays in Smart Power Grid- Discovery and Development Grant, UofM.

Instructor   September 2014- December 2016

Electrical Engineering Department

Southwest Tennessee Community College, Memphis, TN

- Advised and taught courses
- Developed and graded the ability-appropriate homework.
- Administered and proctored students during exams
- Utilized PAWS-online format for homework, exams, and presentations.

Courses (+Labs) Taught:

Fall 2016
- Electronics I
- Introduction to Electrical/Electronics
- Engineering Tech Techniques
- Robotics and Industrial Control
- Circuits II

Spring 2016
- Circuits II
- Electronics I
- Power Technology
- Introduction to Electrical/Electronics
- Introduction to Electrical/Electronic

Summer 2016
- PLC

Fall 2015
- Circuits II
- Electronics I
- Engineering Tech Techniques
- Robotics and Industrial Control

Spring 2015
- Circuits II
- Electronics I
- Engineering Tech Techniques
- Robotics and Industrial Control

Fall 2014
- Circuits II
- Electronics I
- Engineering Tech Techniques
- Robotics and Industrial Control

Graduate Research Assistant   May 2012 – August 2014
Department of Electrical and Computer Engineering
University of Memphis, TN
- Development of an Algorithm to Mitigate Adverse Effects of Time Delays on the Smart Grid- FedEx Institute of Technology.
- Non-Linear control of power grids to improve power quality.

Graduate Teaching Assistant   August 2011- April 2012

Electrical and Computer Engineering Department
University of Memphis, TN
Course
Digital Design Lab
Duties
- Perform lab classes.
- Grade the lab reports.
- Grade the exams and assignments for the theory class

Publication	**Journal Activities:**

Journal Activities:

1) R. Wiencek and **S. Ghosh**, "Overview and Introduction to Deep Reinforcement learning", *to be submitted to IEEE Transaction on Smart Grids*.

2) R. Wiencek and **S. Ghosh**, "Bad Data Injection Attack Detection and Mitigation by Machine and Deep Reinforcement Learning in Virtual Power Plant", *to be submitted to IEEE Transaction on Smart Grids.*

3) R. Wiencek and **S. Ghosh**, et. al., "Cyber Resilient 5G -Enabled Virtual Power System for Growing Power Demand", *to be submitted to IEEE Transaction on Smart Grids.*

4) **S. Ghosh** and M. H. Ali, "Minimization of Adverse Effects of Time Delay on Power Quality Enhancement in Hybrid Grid," *IEEE Systems Journal, vol. 13, no. 3, pp. 3091-3101*, September 2019.

5) **S. Ghosh** and M. H. Ali, "Power Quality Enhancement by Coordinated Operation of Thyristor Switched Capacitor and Optimal Reclosing of Circuit Breakers" *Journal of IET-Generation, Transmission & Distribution*, vol. 9, Issue 12, pp.1301-1307, September 2015.

Book Chapter:

1) **S. Ghosh** and Mohd Hasan Ali. "Superconducting magnetic energy storage control methods." *Superconducting Magnetic Energy Storage in Power Grids*, 59, 2022.

2) **S. Ghosh** and M. H. Ali, "Stability of Remote Microgrid: Control of Power Converters," A chapter (9) in the book titled Emerging Power Converters for Renewable Energy and Electric Vehicles, CRC Press, Taylor & Francis Group, June 2021, ISBN 9780367528034.

3) **Sagnika Ghosh** and Mohd. Hasan Ali, "Optimal Reclosing Techniques for Power Quality Enhancement", A chapter (7) in the book Advances in Electric Power Engineering, pp. 121-152, Laxmi Book Publication, 2015, ISBN: 978-1-329-06197-2.

Conference Papers:

1) C. Malone and **S. Ghosh**, "Attention-Enhanced PPO for Multi-Modal Anomaly Management in Autonomous Microgrids: Handling Sensor Degradation and Cascading Failures", Accepted to be presented at the *Proceedings of the IEEE PES GM, 2026.*

2) C. Malone and **S. Ghosh**, "Microgrid Resilience Gym: A Benchmark and Training Environment for Reinforcement Learning", *Accepted to be presented at Proceedings of the IEEE T&D Conference & Exposition, 2026.*

3) R. Wiencek, and **S. Ghosh**, "Comparative Analysis of Centralized Control Strategies for Photovoltaic Battery Energy Storage System Using Deep Reinforcement Learning", Acceptedd to be presented at the *Proceedings of the IEEE SoutheastCon 2026, Huntsville, AL.*

4) C. Orozco and **S. Ghosh**, "A Resilient Modulatory Advisor using Soft Actor-Critic for Fault-Tolerant Autonomous Microgrid Management", Acceptedd to be presented at the *Proceedings of the IEEE SoutheastCon 2026, Huntsville, AL.*

5) R. Wiencek **S. Ghosh** *et al*., "Cyber Resilient 5G Enabled Communication Framework for Virtual Power Systems," *2025 International Conference on Communication, Computing, Networking, and Control in Cyber-Physical Systems (CCNCPS)*, Dubai, United Arab Emirates, 2025, pp. 224-231, doi: 10.1109/CCNCPS66785.2025.11135712.

6) R. Wiencek, and **S. Ghosh, "**Detection and Mitigation of Bad Data Injection Attack using Deep Reinforcement Learning in a Virtual Power Plant", *2025 7th Global Power, Energy and Communication Conference (GPECOM),* Bochum, Germany, 2025, pp. 572-577, doi: 10.1109/GPECOM65896.2025.11062023.

7) R. Wiencek, and **S. Ghosh**, "Centralized Controller for Photovoltaic MPPT, Bidirectional Charging, and Dynamic Load Control Using Deep Reinforcement Learning", *2025 IEEE PES Grid Edge Technologies Conference & Exposition (Grid Edge), San Diego, CA, USA, 2025, pp. 1-5, doi: 10.1109/GridEdge61154.2025.10887433.*

8) R. Wiencek, and **S. Ghosh**, "Deep Reinforcement Learning for Adaptive Optimization of PI Control for Microgrid Under Fault and Variable Loading", *2024 6th Global Power, Energy and Communication Conference (GPECOM), Budapest*, Hungary, 2024, pp. 826-831, doi: 10.1109/GPECOM61896.2024.10582714

9) R. Wiencek, and **S. Ghosh**, "Adaptive Duty Cycle Control for Optimal Battery Energy Storage System Charging by Reinforcement Learning", 2023 *IEEE Conference on Artificial Intelligence (CAI)*, Santa Clara, CA, USA, 2023, pp. 8-10, doi: 10.1109/CAI54212.2023.00013.

10) R. Wiencek, and **S. Ghosh**, "Optimal Frequency for Optimal Performance and Efficiency of a Single-Phase Wireless Power Transmission System," *2023 5th Global Power, Energy and Communication Conference (GPECOM)*, Nevsehir, Turkiye, 2023, pp. 141-146, doi: 10.1109/GPECOM58364.2023.10175731.

11) R. Wiencek, **S. Ghosh**, et.al, "Simulation of the 5G Communication Infrastructure Between Solar Microinverters and SCADA System", 311-316, doi: 10.1109/GPECOM58364.2023.10175814.

12) R. Wiencek, and **S. Ghosh**, "Comparative Analysis of Three-Phase Configurations for Efficient Wireless Electric Vehicle Charging", *2023 5th Global Power, Energy and Communication Conference (GPECOM)*, Nevsehir, Turkiye, 2023, pp. 276-281, doi: 10.1109/GPECOM58364.2023.10175676.

13) R. Wiencek, and **S. Ghosh**, "Comparative Analysis of Photovoltaic MPPT P&O Algorithm and Reinforcement Learning Agents Utilizing Fuzzy Logic Reward System", *2023 North American Power Symposium (NAPS)*, Asheville, NC, USA, 2023, pp. 1-7, doi: 10.1109/NAPS58826.2023.10318563.

14) R. Wiencek, and **S. Ghosh**, "Optimizing Distributed Energy Resource Management System (DERMS) for Grid-Tied Solar Power", *in IEEE Proceedings of WERC Conference*, April 2023. 11) **S. Ghosh** and M. H Ali, "Exploring Severity Ranking of Cyber-Attacks in Modern Power Grid," Proceedings of the IEEE PES GM, Atlanta, GA, USA, August 4-8, 2019.

15) **S. Ghosh** and M. H. Ali, "Augmentation of Power Quality of Grid-Connected Wind Generator by Fuzzy Logic Controlled TSC," *Proceedings of the IEEE T&D Conference & Exposition*, Denver, CO, USA, April 16-19, 2018.

16) **S. Ghosh** and Mohd. Hasan Ali, "Effects of Cyber-Attacks on the Energy Storage in a Smart Microgrid System," *Proceedings of the IEEE PES GM*, Portland, OR, USA, August 5-10, 2018.

17) **S. Ghosh**, and M. H. Ali, "Impact of Crash Override and Tampering Communication Data Cyber-Attacks on the Power Quality of the Hybrid System," *Proceedings of the IEEE Power Electronics, Drives and Energy Systems (PEDES) Conference*, Indian Institute of Technology Madras in Chennai, TN, India, 18-21 December 2018.

18) **S. Ghosh** and M. H. Ali, "Minimization of Adverse Effects of Time Delay in Smart Power Grid," *Proceedings of the IEEE PES Innovative Smart Grid Technologies (ISGT) Conference*, Paper ID: 219, Washington DC, USA, February 19-22, 2014.

19) **S. Ghosh** and M. H. Ali, "Load Angle Based Optimal Reclosing Technique of Circuit Breakers for Power Quality Enhancement", Paper ID: 55, *Proceedings of the IEEE SoutheastCon 2013*, Florida, USA, April 4-7, 2013.

20) Y. Zhou, **S. Ghosh**, M. H. Ali, and T. E. Wyatt, "Minimization of Negative Effects of Time Delay in Smart Grid System", Paper ID: 39, *Proceedings of the IEEE SoutheastCon 2013*, Florida, USA, April 4-7, 2013.

21) R. Saluja, **S. Ghosh**, and M. H. Ali, "Transient Stability Enhancement of Multi-Machine Power System by Novel Braking Resistor Models", Paper ID: 235, *Proceedings of the IEEE SoutheastCon 2013*, Florida, USA, April 4-7, 2013.

Funding	**PI, "***The Tennessee State University Clean Energy Academy*", by HBCU Clean Energy Education Prize – Partnership Track Phase II, September 2024 – December 2027, $400,000. **Senior Personnel, "***Breaking Barriers to Enable Solar Technology Circularity (BBEST Circularity)"* by DOE Solar Energy Technologies Office (SETO) Materials, Operation, and Recycling of Photovoltaics (MORE PV) Program, October 2024 - September 2029, $177,317. **PI, "**Education and Research Utilizing Datasets from Solar-plus-Storage Plant", by DOE Solar Energy Technologies Office (SETO), EPRI, August 2024 - July 2025, $14,534. **PI, "***The Tennessee State University Clean Energy Academy*", by HBCU Clean Energy Education Prize – Partnership Track Phase 1, March 2024 – July 2024, $100,000. **PI**, "*Integrating Distributed Energy Resources with Grid-interactive Efficient Buildings for Net Zero Energy and Community Resilience",* by NSF Planning Grant: Office of the Director (O/D): EPSCoR Section (OIA): HBCU-EiR-HBCU-Excellence in Research, September 2023-August 2024, $100,000. **Co-PI**, "CISE- MSI: RCBP- RF: CNS: *Orchestration of Network Slicing for 5G-Enabled IoT Devices Using Reinforcement Learning*", by NSF 22-518 Computer and Information Science and Engineering Minority-Serving Institutions Research Expansion Program, September 2023-2025, $400,000. **PI**, "Integration of Cyber Secure 5G-Enabled Distributed Energy Resources (DER) to power grid using Reinforcement Learning", Seed Grant at Tennessee State University, 2023, $10,000. **Senior Personnel**, "Tennessee Technology-Enabled Advanced Mobility Engine (T2EAM Engine)", by *NSF Engines Type I Proposal,* April 2023-April 2025, $400,000. **Co-PI**, "Accelerating Resilience of the Community through Holistic Engagement and Use of Renewables (ARCHER) Planning Framework", by DOE Solar Energy Technologies Office (SETO) Renewables Advancing Community Energy Resilience (RACER) Program, November 2022-October 2025, $313,000. **Principal Investigator (PI)**, "CISE-MSI: DP: CPS: *Cyber Resilient 5G Enabled Virtual Power System for Growing Power Demand*" by NSF 22-518 Computer and Information Science and Engineering Minority-Serving Institutions Research Expansion Program, October 2022-2025, $600,000. **PI**, "5G Enabled Dynamic Wireless Charging Systems for Electric Vehicles", Seed Grant at Tennessee State University, 2023, $5,000. **PI**, "Design and Simulation of the 5G Communication Infrastructure Between Solar Micro-Inverters and SCADA System", Mini grant reference number CyBR-MSI 2022-009, May 2022-October 2022, $10,000. **$5,000** for Undergraduate Capstone Design Project titled "Design of A Load Forecasting Software for Electrical Substations" under GridEd program by Electric Power Research Institute (EPRI), 2022-2023. **$5,000** for Undergraduate Capstone Design Project titled "Design of a micro-inverter for solar panel", under GridEd program by Electric Power Research Institute (EPRI), 2022-2023. **$5,000** for Undergraduate Capstone Design Project titled "Design of a Distributed Solar Powered System for Electric Vehicle Wireless Charging", under GridEd program by Electric Power Research Institute (EPRI), 2022-2023. **$5,000** for Undergraduate Capstone Design Project titled "Design of a Solar Energy System with Smart Controller Capable of Weather Prediction and Acting as a Virtual Power Plant (VPP)" under GridEd program by Electric Power Research Institute (EPRI), 2021-2022. **$5,000** for Undergraduate Capstone Design Project titled "Dynamic Vehicle Charging System" under GridEd program by Electric Power Research Institute (EPRI), 2021-2022.

	• **PI**, "Statistical Approach to Smart Grid Security", Seed Grant at Tennessee State University, 2022, $10,000.
Awards and Certificates	• **Received 1st Prize in** Research Symposium, 2024. • **Received Excellence in Teaching Award** at Tennessee State University in 2023. • **Received T.I.G.E.R. Research Award** at Tennessee State University in 2023. • **Received Research Appreciation Award** at Tennessee State University in 2023. • **Received First Place** in WERC Environmental Design Contest at NMSU Bench Scale Demonstration, Las Cruces, NM, 2023. • **Received travel grant** to attend GridEd Technology Transfer Workshop by EPRI in June 2022. • **Received funding** to attend Delta Junior Faculty Institute in April 2022. • **Faculty member of the JUMP into STEM initiative** by Oak Ridge National Laboratory (ORNL), National Renewable Energy Laboratory (NREL) and Department of Energy (DOE) to advance student skills in the STEM fields and encourage early-stage research in building energy efficiency. • **Industry Advisory Board (IAB)** member on the "Scalable hybrid large-scale dc-ac grid analysis" project by ORNL 2022. • **Received funding** for Undergraduate Capstone Design Project titled "Design of a Solar Energy System with Smart Controller Capable of Weather Prediction and Acting as a Virtual Power Plant (VPP)" under GridEd program by Electric Power Research Institute (EPRI), 2021-2022. • **Received funding** for Undergraduate Capstone Design Project titled "Dynamic Vehicle Charging System" under GridEd program by Electric Power Research Institute (EPRI), 2021-2022. • **Received a scholarship** to attend **Cyber Resilient Energy Delivery Consortium (CREDC)** summer workshop on June 12-16, 2017. • **Received certificate** for completion for online course on "*Understanding Social Engineering Attacks*". • **Received a scholarship** to attend **CRA-W Grad Cohort workshop** on April 15-16, 2016. • **Received a scholarship** to attend **CRA-W Grad Cohort workshop** on April 10-11, 2015. • **Received a scholarship** to attend **Trustworthy Cyber Infrastructure for Power Grid summer workshop (TCIPG)** on June 17-21, 2013. • Received Second Prize in a *State Level Design Competition* from *Indian Society of Lighting Engineers* organized by Department of Illumination Engineering, Jadavpur University, W.B., India, 2010. • Achieved **finalist** certificate in **Micromania** event in **Festronix**, the technical festival of Institute of Engineering and Management, Salt Lake in 2009. • Achieved a participation certificate in the **Second National Cyber Olympiad** for distinctive performance in 2001. • **Graduate Assistantship** [Fall 2011-Spring 2014] Electrical and Computer Engineering, University of Memphis • **Summer Research Fund** [Summer 2012,2013,2014] Electrical and Computer Engineering, University of Memphis
Poster Presentation	• R. Wiencek, **S. Ghosh,** et. al., "Cyber Resilient 5G Enabled Virtual Power System for Growing Power Demand", *Presented at NSF Awardee PI Meeting*, Denver, 2024. • **S. Ghosh,** et.al**.,** "Orchestration of Network Slicing for 5G-Enabled IoT Devices Using Reinforcement Learning", *Presented at NSF Awardee PI Meeting*, Denver, 2024. • R. Wiencek, **S. Ghosh**, "Comparative Analysis of Photovoltaic MPPT P&O Algorithm and Reinforcement Learning Agents Utilizing Fuzzy Logic Reward System", *Presented at IEEE North American Power symposium (NAPS)*, Asheville, NC, 2023.

- R. Wiencek, **S. Ghosh**, "Adaptive Duty Cycle Control for Optimal Battery Energy Storage System Charging by Reinforcement Learning", *IEEE Conference on Artificial Intelligence*, California, 2023.
- **S. Ghosh** and Mohd. Hasan Ali, "Minimization of Adverse Effects of Communication Delays Caused by Cyber-Attacks on Smart Power Grid", Presented at *2017 Defense Innovation Technology Acceleration Challenges*, Tampa, Florida.
- **S. Ghosh** and Mohd. Hasan Ali, "Cyber Security Issue and Solution for Energy Storage System", Presented at *2017 Defense Innovation Technology Acceleration Challenges*, Tampa, Florida.
- Participated for Poster Presentation at Cyber Resilient Energy Delivery Consortium (CREDC) summer workshop on June 14th, 2017.
- Participated in a Poster Presentation at 26th Annual Student Research Forum at University of Memphis on March 27th, 2017.
- Participated in Poster Presentation Competition at Electrical and Computer Engineering Department of University of Memphis on April 25th, 2017.
- Attended the CRA-W Grad Cohort workshop from April 15-16, 2016, in San Diego, California.
- Attended the CRA-W Grad Cohort workshop from April 10-11, 2015, in San Francisco, California.
- Participated in Poster Presentation Competition at Electrical and Computer Engineering Department of University of Memphis on April 31st, 2014.
- Participated in a Poster Presentation at 26th Annual Student Research Forum at University of Memphis on March 31st, 2014.
- Attended Trustworthy Cyber Infrastructure for Power Grid (TCIPG) summer workshop from June 17-21, 2013, in St. Charles, Illinois.

Scholarly Activities	**Panelist for 2024 Resilience and Equity in the Clean Energy Sector Summit** (RECESS24). - IEEE **Senior Member Panelist**, 2023. **Presented at Engineering Seminar**, College of Engineering, "Integration and Control of Distributed Energy Resources", 2023. **Awardee Success Panelist** for NSF CISE MSI by ASEE, 2022 - Attended **Virtual Summer Writing Workshop** at TSU, 2021 and 2022. - Chaired a session in NCUR 2018 at University of Memphis. - Reviewer for the IEEE-IAS Energy Systems Committee, ongoing. - Reviewer for the IET Generation, Transmission & Distribution, ongoing. - Reviewer for the IEEE T&D. - Reviewer for Technology and Economics of Smart Grids and Sustainable Energy, ongoing. - Reviewer for the PES General Meeting.
University Service	**Departmental Committees** - Recruitment and Retention Committee since 2021 - Faculty and Staff Search and hiring Committee, ongoing **College Committees** - Faculty Senate - Graduate Council **University Committees** - Faculty Senate Nomination and Appointment Chair, Spring 2024 - Faculty Chair of Academic Committee, Fall 2024

	o Faculty Senate Member of Benefit and Welfare Committee
Professional Activities	• NSF **Proposal Reviewer** for CISE Directorate. • **Invited as Guest Editor** for Distributed Control for Energy and Power Systems, MDPI, 2024. • Received scholarship to attend and participate in the **AAAS-IUSE Summit** in Washington D.C., 2024. • Received funding to attend Inclusive Engineering Consortium (IEC) Conference, 2024. • Attended the **FuSe Workshop** at IEC Conference, 2024. • Attended the **ASEE Delta Junior Faculty Institute** in 2022. • IEEE Senior Member since 2022 • IEEE Power and Energy Society (PES) Member • American Society Engineering Education (ASEE) • Inclusive Engineering Consortium (IEC) • Society of Women Engineer (SWE) • IEEE Young Professionals • Women in Power (WiP) • CIGRE

Students	• **PhD Student**
	   o Richard Wiencek, Fall 2024- Present
	• **Master's Students**
	   o Jael Koki, Spring 2025- Present
	   o Cameron Malone, Spring 2025- Present
	   o Md. Robiul Islam, Fall 2024- Present
	   o Cindy Orozco, Fall 2024- Present
	   o Richard Wiencek, Fall 2022-Spring 2024: "Reinforcement Learning Based Smart Grid Control of an 8 MVA Microgrid Operated in Grid Tied and Islanded Modes".
	• **Undergraduate students**
	   o Cameron Malone, Spring 2024: Design of Renewable Energy Battery Charging System
	   o Justin Thompson, Fall 2023: Design of a Resilient and Reliable System Protection for an Electric Distribution Line
	   o Justus Brown, Spring 2023: Design of a Reliable Alternative Charging Device to Electric Vehicle Charging Stations
	   o Alexis Mendoza, Spring 2023: Design of Energy Consumption Forecasting Software due to the Implementation of Electric Vehicles.
	   o Bryson Murray, Spring 2023: Design of Power Distribution System for Hospital Using Alternative Energy Source to Operate off the Grid
	   o Emmanuel Safari, Spring 2023: Design of an Efficient DC to AC Inverter for Solar Panel
	   o Branden Currie, Fall 2022: Design of Wireless Power Receiver for Electric Vehicles
	   o Garret Potts, Fall 2022: Design of Renewable Energy System for Powering Athletic Field Lighting
	   o Nadia Abdulla, Spring 2022: Design of Gas Leakage Detection Device
	   o Cameron Fagan, Spring 2022: Design of Tracking System for Renewable Energy Power System
	   o Tulio Nunez, Spring 2022: Design of Wireless Monitoring Device for Renewable Energy Power System
	   o Richard Wiencek, Spring 2022: Design of an Energy Regulating and Monitoring Storage System with Inverter for a Renewable Energy Distribution System

	- o Sheryl Haley, Fall 2021: Design of Line Protection System for Mini Power Grid with Renewable Energy to Residential Subdivision - o Ryan Hibbard, Fall 2021: Design of Normal and Emergency Power Distribution System in a Hospital - o Josh McGill, Fall 2021: Design of a Residential Time of Use Monitor and Power Load Controller - o Safwan Taha, Fall 2021: Design of Power Substation for Mini Power Grid Distribution System with Renewable Energy to Residential Subdivision - o Eric B. Whitaker, Fall 2021: Design of a Balanced Distribution System for Mini Power Grid with Renewable Energy to Residential Subdivision **Mentoring Students** - o Cameo Pinder, Spring 2024-Present
Software Skills	**Operating systems:** Windows, Mac IOS **Language:** C, C++, Python **Engineering Software:** MATLAB/Simulink, PSpice, LTSpice, PSIM, Power World, PSSE, AUTOCAD Electrical **Microsoft Office**: Word, Excel, Power Point, Outlook, OneNote, VISIO, Projects