

KHANDAKER AKRAMUL HAQUE



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Education

Texas A&M University

2023 - Present

Ph.D. in Electrical and Computer Engineering on going under the supervision of Dr. Katherine Davis

CGPA 4.00/4.00

Bangladesh University of Engineering and Technology

2015 – 2020

Master of Science in Electrical and Electronic Engineering

CGPA 4.00/4.00

Bangladesh University of Engineering and Technology

2010 – 2015

Bachelor of Science in Electrical and Electronic Engineering

CGPA 3.83/4.00

Appointments

Texas A&M University (TAMU)

January 2023 – Present

Graduate Research Assistant

USA

- “Security-Oriented Cyber-Physical Intrusion Response and Recovery”. The work is funded by the department of energy (DOE) of the USA under award DE-CR0000018.

Dhaka Power Distribution Company Limited (DPDC)

June 2021 – January 2023

Assistant Engineer (Power Distribution Company)

Bangladesh

- To construct and coordinate operation of facilities for transmitting power from distribution points to consumers.
- To propose cost reduction initiatives while maintaining high efficiency of electrical distribution systems.
- To make complex electrical computations in order to determine type and arrangement of circuits and size, type and number of pieces of equipment, such as transformers, circuit breakers, switches and lightning arresters.

North-West Power Generation Company Limited (NWPGL)

August 2017 – June 2021

Assistant Engineer (Power Generation Company)

Bangladesh

- To monitor, inspect and operate the combined cycle power plant and its auxiliary system.
- To communicate with National Load Dispatch Centre (National Grid) while ensuring power plant and grid safety.
- To monitor, inspect and operate steam turbine and its auxiliary components.
- To monitor, inspect and operate heat recovery steam generator and its auxiliary components.

Stamford University Bangladesh

February 2016 – July 2017

Lecturer, Department of Electrical and Electronic Engineering

Bangladesh

- Courses Taught: Semiconductor Device Theory, Power Electronics, Opto-electronics, Power System.
- Laboratory Simulation Conducted: Power Electronics, VLSI, Power System and Control System.

Professional Membership

- IEEE (USA)
- IET (UK)
- CIGRE (France)

Research Interest

- Cybersecurity
- Deep Learning
- Power Electronics
- Machine Learning
- Reinforcement Learning
- Device Physics

Selected Research Publication (Visit My [Google Scholar](#) | [Researchgate Pages](#))

Peer-Reviewed Journal

1. Sun, S., **Haque, K.A.**, Huo, X., Homoud, L.A., Hossain-McKenzie, S., Goulart, A. and Davis, K., 2024. “A Reinforcement Learning Engine with Reduced Action and State Space for Scalable Cyber-Physical Optimal Response.” arXiv preprint arXiv:2410.04518. [Under review: IET Cyber-Physical Systems: Theory & Applications] DOI: <https://doi.org/10.48550/arXiv.2410.04518>
2. **K. A. Haque**, and M. Z. Baten, “Correlation between performance characteristics of indoor photovoltaic devices and DC-to-DC up-converters for low-power electronic applications,” IET Circuits, Devices & Systems, 2021
DOI: <https://doi.org/10.1049/cds2.12069>

3. A. Saha, **K. A. Haque**, and M. Z. Baten, "Performance evaluation of singlejunction indoor photovoltaic devices for different absorber bandgaps under spectrally varying white light-emitting diodes," IEEE Journal of Photovoltaics, 2020
DOI: <https://doi.org/10.1109/JPHOTOV.2019.2959938>
4. **K. A. Haque** and M. Z. Baten, "On the prospect of CZTSSe-based thin film solar cells for indoor photovoltaic applications: A simulation study," AIP Advances, 2019
DOI: <https://doi.org/10.1063/1.5099274>

Conference Presentation

1. **K. A. Haque**, L. Al Homoud, X. Zhuang, M. Elnour, A. Goulart and K. Davis, "On Graph Theory vs. Time-Domain Discrete-Event Simulation for Topology-Informed Assessment of Power Grid Cyber Risk," 2024 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm), Oslo, Norway, 2024.
DOI: <https://doi.org/10.1109/SmartGridComm60555.2024.10738105>
2. Logan Blakely, Georgios Fragkos, Shamina Hossain-McKenzie, Christopher Goes, **Haque, K. A.**, Adam, Summers, and Katherine Davis. "A Comparison Study of Feature Extraction and Data Fusion Techniques for Improving Cyber-Physical Situational Awareness" In 2024 IEEE/PES Transmission and Distribution Conference and Exposition (T&D) (pp. 1-5). IEEE
DOI: <https://doi.org/10.1109/TD47997.2024.10556209>
3. Sun, S., Hossain-McKenzie, S., Al Homoud, L., **Haque, K. A.**, Goulart, A., & Davis, K. (2024, February). "An AI-based Approach for Scalable Cyber-Physical Optimal Response in Power Systems." In 2024 IEEE Texas Power and Energy Conference (TPEC) (pp. 1-6). IEEE.
DOI: <https://doi.org/10.1109/TPEC60005.2024.10472265>
4. **Haque, K. A.**, Davis, K., Blakely, L., Hossain-McKenzie, S., Fragkos, G., and Goes, C. (2024, February). "Multimodal Learning in Cyber-Physical System: A Deep Dive with WSCC 9-Bus System." In 2024 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT) (pp. 1-5). IEEE.
DOI: <https://doi.org/10.1109/ISGT59692.2024.10454149>

Research Experience

Texas A&M University (USA)

- Security-Oriented Cyber-Physical Intrusion Response and Recovery Engine for Next Generation Energy Management System funded by the department of energy (DOE) of the USA under award DE-CR0000018.
- Scalable Reinforcement Learning Environment: Funded by the department of energy (DOE) of the USA under award DE-CR0000018.

Sandia National Laboratories (USA)

- griDNA: Multilevel Cyber-Physical Sensor Data-Fusion for Situational Awareness into a Decentralized Electric Grid. This work is supported by the Sandia Laboratory Directed Research and Development Project # 229434
- The incorporation of secure data storage utilizing both IPFS blockchain and Multichain blockchain technologies is aimed at fortifying the existing security measures. This integration introduces an additional stratum of protection, thereby enhancing the overall security posture of the system. This work is supported by the Sandia Laboratory Directed Research and Development Project # 229434.

Synergetic Activity

- Worked as technical co-chair for the Texas Power & Energy Conference (TPEC) 2024

Reviewer Service

- [Journal of Computational Electronics](#)

Technical Skills

Programming Languages: Python, JavaScript, Matlab, R, C, C++, C#, SQL, NoSQL, Solidity

Developer Tools: VS, VS Code, Anaconda, PyCharm, AWS (EC2, S3, RDS, Redshift)

Technologies/Frameworks: React, Node, Express, Flutter, Tensorflow, PyTorch, Truffle, Multichain, IPFS, SAS

DevOps : Docker, Kubernetes, Jenkins

Image Editing: Photoshop, Illustrator

Video Editing: Premiere Pro, After Effects