Mohammad Raihan Uddin

mu0016@uah.edu | mohammadraihanuddin.github.io | LinkedIn | GitHub | Google Scholar

Education

The University of Alabama in Huntsville — Huntsville, AL, USA
M.S. in Electrical Engineering, Expected Dec. 2025

Daffodil International University — Dhaka, Bangladesh
B.Sc. in Electronics & Telecommunication Engineering, Feb. 2017

Research Experience

Researcher - Networking, Intelligence and Security Lab (NIS Lab) — Jan 2024 – Present

- My research focuses on federated learning, artificial intelligence, quantum learning, privacy & security, and wireless communication.
- I engage in active research projects resulting in multiple conference publications and several papers currently under review at top-tier journals and conferences.
- Key projects include developing a Quantum Federated Learning simulator (SimQFL), designing secure UAV networks with Zero-Knowledge Proofs, and building attack detection systems for smart grids.

Teaching Experience

Graduate Teaching Assistant, ECE Department, UAH — Jan 2024 – Present

- I support and mentor students by delivering course content, facilitating lab sessions, and contributing to curriculum development.
- Courses supported: Computer Organization, Intro to Software Engineering, Intro to Computer Networks, Electric Circuits & Electronics Design Lab, Electric Circuits System, Operating System Lab, Intro to Computer Programming for Engineering Lab.

Research Interests

Federated Learning, Artificial Intelligence, Quantum Learning, Privacy & Security, Wireless Communication

Publications

Published Papers

1. R. Rahman, A. Pokharel, **M. R. Uddin**, D. C. Nguyen, "SimQFL: A Quantum Federated Learning Simulator with Real-Time Visualization," in Proceedings of *IEEE International Conference on Quantum Computing and Engineering*, 2025.
2. **M. R. Uddin**, R. Rahman, D. C. Nguyen, "False Data Injection Attack Detection in Edge-based Smart Metering Networks with Federated Learning," in Proceedings of *IEEE Consumer Communications & Networking Conference (CCNC)*, 2025.

3. V. K. Quy, N. M. Quy, T. T. Hoai, S. Shaon, **M. R. Uddin**, D. C. Nguyen, T., & P. Chatzimisios, "From Federated Learning to Quantum Federated Learning for Space-Air-Ground Integrated Networks," in Proceedings of *IEEE Conference on Standards for Communications and Networking (CSCN)*, 2024.
4. M. Arefin, **M. R. Uddin**, N. A. Evan, M. R. Alam, et al., "Enterprise network: Security enhancement and policy management using next-generation firewall (NGFW)," in *Computer Networks, Big Data and IoT, Springer*, 2021, pp. 753–769.
5. **M. Uddin**, N. A. Evan, M. R. Alam, M. Arefin, et al., "Analysis of generic routing encapsulation (GRE) over IPSec VPN tunneling in IPv6 network," in *International Conference on Ubiquitous Communications and Network Computing, Springer*, 2021, pp. 3–15.
6. S. K. Dey, **M. R. Uddin**, M. Rahman, et al., "Performance analysis of SDN-based intrusion detection model with feature selection approach," in *Proceedings of international joint conference on computational intelligence, Springer*, 2020, pp. 483–494.
7. N. F. Firoz, M. Arefin, **M. R. Uddin**, et al., "Performance optimization of layered signature based intrusion detection system using Snort," in *International Conference on Cyber Security and Computer Science, Springer*, 2020, pp. 14–27.
8. **M. R. Uddin**, K. M. Kabir, and M. T. Arefin, "Artificial neural network inducement for enhancement of cloud computing security," in *2019 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT), IEEE*, 2019, pp. 1–6.
9. S. K. Dey, M. M. Rahman, and **M. R. Uddin**, "Detection of flow based anomaly in OpenFlow controller: Machine learning approach in software defined networking," in *2018 4th International Conference on Electrical Engineering and Information & Communication Technology (iCEEiCT), IEEE*, 2018, pp. 416–421.
10. S. K. Dey, **M. R. Uddin**, K. M. Kabir, and M. M. Rahman, "Enhancing the security of cloud computing: Genetic algorithm and QR code approach," in *2017 4th International Conference on Advances in Electrical Engineering (ICAEE), IEEE*, 2017, pp. 181–186.
11. **M. R. Uddin**, K. M. Kabir, and M. M. Hasan, "Data security through image processing by Blowfish algorithm, genetic algorithm and LSB," *Foundation of Computer Science*, vol. 148, 2016.

Pre-prints & Under Review

[11] **M. R. Uddin**, D. C. Nguyen, "Unmanned Aerial Vehicles (UAVs): A State of the Art Survey," Submitted to *IEEE Communications Surveys & Tutorials*.

[12] M. B. Zami, **M. R. Uddin**, D. C. Nguyen, "Secure UAV-assisted Federated Learning: A Digital Twin-Driven Approach with Zero-Knowledge Proofs," Submitted to *IEEE Internet of Things Journal*.

[13] V. K. Quy, S. Shaon, **M. R. Uddin**, N. M. Quy, D. C. Nguyen, "Aerial Intelligent Reflecting Surface (A-IRS) for Wireless Power Transfer in 6G Networks: Security Challenges and Solutions," Submitted to *IEEE Network Magazine*.

[14] **M. R. Uddin**, R. Rahman, D. C. Nguyen, "Synergy Quantum Federated Learning and Security," Submitted to *IEEE International Conference on Quantum Computing & Engineering (QCE)*.

[15] **M. R. Uddin**, D. C. Nguyen, "Quantum Federated Learning: A Comprehensive Survey," Submitted to *IEEE Communications Surveys & Tutorials*.

[16] R. Rahman, A. Pokharel, **M. R. Uddin**, D. C. Nguyen, "SimQFL: A Quantum Federated Learning Simulator with Real-Time Visualization," Submitted to *IEEE Transactions on Quantum Engineering*.

[17] S. Shaon, **M. R. Uddin**, D. C. Nguyen, "Quantum Federated Learning in AI-Native 6G Wireless Networks," Submitted to *IEEE Network Magazine*.

Technical Skills & Certifications

Programming & Frameworks: Python, , MATLAB, C++,
PyTorch, TensorFlow, NumPy, Pandas, Scikit-Learn, Qiskit, PennyLane, TensorFlow Quantum, ZoKrates, zk-STARKs, ZoKrates
Systems & Technical: Cisco (CCNA), RedHat (RHCSA, RHCE), AWS (Solutions Architect), Docker (DCA), Kubernetes (CKA), MySQL, LaTeX, and Linux Systems.

Certifications

Certified Kubernetes Administrator (CKA)
AWS Certified Solutions Architect – Associate
Docker Certified Associate (DCA)
Red Hat Certified Engineer (RHCE)
Red Hat Certified System Administrator (RHCSA)
Cisco Certified Network Associate (CCNA)

Professional Service & Leadership

Head Organizer, TEDxUA Huntsville 2025	2025
Secretary, UAH Graduate Student Association	2024 – 2025
President, UAH Bangladeshi Student Association	2024 – 2026
President, House of Youth Dialogue	2017 – 2023
Secretary General / Deputy SG, Bangabandhu Model United Nations	2022 – 2023
Convener, House of Youth Dialogue Model United Nations	2019, 2023
Graduate Student Member, IEEE (Communication and Computer Societies)	2015 –
Volunteer, IEEE-USA IWRC Aerospace & Defense	2024

Peer Review Service

Served as a peer reviewer for nearly 30 papers for the following top-tier journals:

- *IEEE Internet of Things Journal*
- *ACM Computing Surveys*
- *IEEE Open Journal of the Communications Society*
- *IEEE Internet of Things Magazine*
- *IEEE Transactions on Green Communications and Networking*
- *IEEE Transactions on Network Science and Engineering*
- *IEEE Transactions on Cognitive Communications and Networking*

References

Dr. Dinh Chi Nguyen
Assistant Professor,
Electrical and Computer Engineering
The University of Alabama in Huntsville, USA
Email: dcn0006@uah.edu
Phone: 256.824.6258
301 Sparkman Drive, ENG 217I
Huntsville, AL 35899, USA

Dr. Octavia A. Dobre
Professor,
Faculty of Engineering and Applied Science
Memorial University, Canada
Email: odobre@mun.ca
Phone: 709.864.4045
240 Prince Phillip Drive, S.J. CSF 4119
St. John's, NL A1B 3X5, Canada