# MUHAMMAD BAQER MOLLAH

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## RESEARCH INTERESTS

• Internet of Things (IoT) • Security & Privacy • Deep Learning • Wireless Sensing & Communications

## CURRENT POSITION

**University of Houston** September 2025 - Now
Dept. of Information Science Technology
**Post-Doctoral Fellow**
*Project:* USDOT Tier 1 UTC Transportation Cybersecurity Center for Advanced Research and Education (CYBER-CARE)
◦ Conducting research on ensuring in-vehicle network security by leveraging edge computing and access control encryption techniques
◦ Designing and evaluating a practical end-to-end security-aware mechanism for connected vehicles by implementing multi-level access control schemes
◦ Working closely with students to define research directions, plan project milestones, and oversee implementation and paper writing.

## EDUCATION

**University of Massachusetts Dartmouth** Fall 2022 - Summer 2025
**PhD in Electrical and Computer Engineering**
*Advisor:* Prof. Honggang Wang, IEEE Fellow
*Dissertation:* On Enabling Multi-Modal Sensing and Security Techniques for Connected Vehicles
*Courses Taken (Selected):* Network Security, Multimedia Communications, Advanced Computer Systems, and Dependable & Secure Computing

**Jahangirnagar University, Dhaka, Bangladesh** 2015 - 2016
**MS in Computer Science**
*Research Project:* Secure Data Sharing and Searching at the Edge of Cloud Connected Smart Devices
*Advisor:* Prof. Md. Abul Kalam Azad
*Courses Taken (Selected):* Artificial Neural Networks, Mobile & Wireless Communications, Information Theory & Coding System, Distributed Systems, and Cloud Computing

**International Islamic University Chittagong, Chittagong, Bangladesh** 2009 - 2014
**BS in Electrical and Electronic Engineering**
*Final Year Project:* E-Police System for Improved E-Government Services in Bangladesh
*Advisor:* Prof. Sikder Sunbeam Islam

## PAST EXPERIENCES

**University of Massachusetts Dartmouth** September 2022 - August 2025
Dept. of Electrical and Computer Engineering
**Research Assistant**
*Project:* Enabling Machine Learning based Cooperative Perception with mmWave Communication for Autonomous Vehicle Safety (NSF Funded)
**Teaching Assistant** (Fall 2023)
*Course:* Introduction to Engineering & Computing (Lab)

**Nanyang Technological University, Singapore** March 2019 - May 2022
School of Computer Science and Engineering
**Research Associate**
*Lab:* Computer Networks and Communications Lab
*Topics:* AI and Blockchain application to Cyber-Physical Systems

**Jahangirnagar University, Dhaka, Bangladesh** September 2016 - December 2017
**Dept. of Computer Science and Engineering**
**Research Assistant**
*Topics:* IoT Communications and Security

**Bangladesh University of Engineering and Technology, Dhaka** February 2015 - August 2015
Dept. of Electrical and Electronic Engineering
**Project Engineer**
*Project:* SCADA System Installation, Commissioning and Testing for Dhaka Power Distribution Company Limited 33/11KV Distributed Substations
*Responsibilities:* Making the SCADA interface boards, preparing the data acquisition (DAQ) module interface for the substation remote terminal unit (RTU), SCADA interface boards installation & wiring in substation breaker panels and SCADA database.

## VISITING EXPERIENCE

**Singapore University of Technology and Design, Singapore** January 2018 to January 2019
Information System Technology and Design Pillar
*Group:* Automated Systems Security Research Group
*Project:* Testing and Monitoring Security of Industrial IoT
*Host:* Prof. Sudipta Chattopadhyay

## PUBLICATIONS

Google Scholar Profile: https://scholar.google.com/citations?user=VijQVZYAAAAJ&hl=en

### Under Preparation

[2] **M.B. Mollah**, K. Lee, "*Practical End-to-End Security-Aware Mechanism for Connected Vehicles by Multi-Level Access Control*", Under Preparation, 2025.

[1] **M.B. Mollah**, K. Lee, "*Ensuring In-Vehicle Network Security with Edge Computing and Access Control Encryption*", Under Preparation, 2025.

### Journals/Magazines

[J5] **M.B. Mollah**, H. Wang, M.A. Karim, H. Fang, "*Multi-Modal Sensing and Fusion in mmWave Beamforming for Connected Vehicles: A Transformer Based Framework*", pp. 1-14, Under Review, IEEE Transactions on Vehicular Technology, 2025.

[J4] **M.B. Mollah**, H. Wang, M.A. Karim, H. Fang, "*Multi-Modality Sensing in mmWave Beamforming for Connected Vehicles Using Deep Learning*", IEEE Transactions on Cognitive Communications and Networking, pp. 1-15, March 2025. Online: https://doi.org/10.1109/TCCN.2025.3558026

[M2] **M.B. Mollah**, H. Wang, M.A. Karim, H. Fang, "*mmWave Enabled Connected Autonomous Vehicles: A Use Case with V2V Cooperative Perception*", IEEE Network, vol. 38, no. 6, pp. 485-492, Nov. 2024. Online: https://doi.org/10.1109/MNET.2023.3321520

[J3] **M.B. Mollah**, M.A.K. Azad, Y. Zhang, "*Secure Targeted Message Dissemination in IoT Using Blockchain Enabled Edge Computing*", IEEE Transactions on Consumer Electronics, vol. 70, no. 3, pp. 5389-5400, Aug. 2024. Online: https://doi.org/10.1109/TCE.2024.3436825

[J2] **M. B. Mollah**, J. Zhao, D. Niyato, Y. L. Guan, C. Yuen, S. Sun, K.-Y. Lam, and L. H. Koh, "*Blockchain for the Internet of Vehicles towards Intelligent Transportation Systems: A Survey*", IEEE Internet of Things Journal, vol. 8, no. 6, pp. 4157-4185, March 2021. Online: https://doi.org/10.1109/JIOT.2020.3028368

[J1] **M. B. Mollah**, J. Zhao, D. Niyato, K.-Y. Lam, X. Zhang, A. M.Y.M. Ghias, L. H. Koh, and L. Yang, "*Blockchain for Future Smart Grid: A Comprehensive Survey*", IEEE Internet of Things Journal, vol. 8, no. 1, pp. 18-43, January 2021. Online: https://doi.org/10.1109/JIOT.2020.2993601

[M1] **M.B. Mollah**, M.A.K. Azad, A. Vasilakos, "*Secure Data Sharing and Searching at the Edge of Cloud-Assisted Internet of Things*", IEEE Cloud Computing, Vol. 4, No. 1, January-February 2017, pp. 34-42. Online: https://doi.org/10.1109/MCC.2017.9

**Book Chapter**

[B1] **M.B. Mollah**, S. Zeadally, M.A.K. Azad, "*Emerging wireless technologies for Internet of Things applications: Opportunities and challenges*", In Encyclopedia of Wireless Networks, Springer, 2020, pp. 390-400, *Editors: Profs. Xuemin Shen, Xiaodong Lin, and Kuan Zhang.* Online: https://doi.org/10.1007/978-3-319-32903-1_328-1

**Conference Proceedings**

[C4] **M.B. Mollah**, H. Wang, H. Fang,, "*Evaluating Vulnerabilities of Connected Vehicles Under Cyber Attacks by Attack-Defense Tree*", Submitted to IEEE International Conference on Communications (IEEE ICC), Glasgow, Scotland, UK, 2026.

[C3] **M.B. Mollah**, H. Wang, H. Fang, "*Multi-Modal Sensing Aided mmWave Beamforming for V2V Communications with Transformers*", pp. 1-6, IEEE Global Communications Conference (IEEE GLOBECOM), Taipei, Taiwan, 2025, pp. 1-6. (Accepted) Online: https://arxiv.org/abs/2509.11112

[C2] **M.B. Mollah**, H. Wang, H. Fang, "*Position Aware 60 GHz mmWave Beamforming for V2V Communications Utilizing Deep Learning*", IEEE International Conference on Communications (IEEE ICC), Denver, CO, USA, 2024, pp. 4711-4716. Online: https://doi.org/10.1109/ICC51166.2024.10622582

[C1] **M.B. Mollah**, K.R. Islam, S.S. Islam, "*E-Police System for Improved E-Government Services of Developing Countries*", 25th IEEE Annual Canadian Conference on Electrical & Computer Engineering (CCECE), Montreal, Canada, April-May, 2012, pp. 1-6. Online: https://doi.org/10.1109/CCECE.2012.6335057

## PROPOSAL WRITING EXPERIENCE

- **NSF - Collaborative Research:** CIF: Medium: Towards Fully Deep Learning-based mmWave Communications for Complex Mobile RF Environments, 2024, Contributed one research thrust out three in total.

## RELATED TRAINING

**AI Summer School** July 2019
AISingapore and National University of Singapore
Singapore.

**Server Administration & Cloud Management** September 2016 - November 2016
BASIS Institute of Technology & Management (BITM)
Dhaka, Bangladesh.

## SERVICES

Web of Science Public Profile: https://www.webofscience.com/wos/author/record/T-4705-2019

**Reviewer for Journals/Magazines:** IEEE Communications Magazine, IEEE Network, IEEE Wireless Communications Magazine, IEEE Transactions on Wireless Communications, IEEE Wireless Communications Letters, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Mobile Computing, IEEE Transactions on Industrial Informatics, IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Information Forensics and Security, IEEE Internet of Things Journal, IEEE Transactions on Network and Service Management, ACM Transactions on Computing for Healthcare, ACM Computing Surveys, Future Generation Computer Systems (Elsevier).

**Volunteer:** • Student Volunteer at IEEE PES International Conference on Innovative Smart Grid Technologies (ISGT Asia 2018), May 22-25 2018, Singapore.

## MEMBERSHIP

Member of • IEEE • IEEE Communications Society • IEEE Vehicular Technology Society

## REFERENCES

**Dr. Honggang Wang**, IEEE Fellow
Professor and Founding Chair
Dept. of Graduate Computer Science & Engg.
Katz School of Science and Health
Yeshiva University, Manhattan, NY 10016
*Email:* honggang.wang@yu.edu

**Dr. Mohammad Ataul Karim**, IEEE Fellow
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