# Md Mahbubur Rahman

Assistant Professor, Computer Science
Queens College & Graduate Center
City University of New York
Email: mdmahbubur.rahman@qc.cuny.edu

Office: Science Building–A210
65-30 Kissena Blvd., Flusing, NY 11367
Homepage: https://mrahmanpage.github.io
Google Scholar: user=bNwqZZQAAAAJ

## Research Interest

Low-Power Wide-Area Networks
Wireless Sensor Networks
Internet of Things
Embedded and Distributed Systems

## Education

| | |
|---|---|
| Aug 2020 | **PhD**, Computer Science<br>Wayne State University, Detroit, MI<br>Dissertation: Low-Power Wide-Area Network Design |
| Apr 2012 | **Bachelor of Science**, Computer Science and Engineering<br>Bangladesh University of Engineering and Technology, Dhaka, Bangladesh<br>Thesis: Application and Performance of Bloom Filters in P2P Networks |

## Employment

| | |
|---|---|
| Aug 26, 2020 – Current | **Assistant Professor**, Department of Computer Science<br>City University of New York - Queens College and Graduate Center, NY |
| Nov 2011 – Dec 2014 | **Software Engineer**<br>CIMSOLUTIONS Bangladesh Limited, Dhaka, Bangladesh<br>Samsung R&D Institute Bangladesh Limited, Dhaka, Bangladesh<br>Structured Data Systems Limited, Dhaka, Bangladesh |

## Journal Publication

- Prashant Modekurthy, Dali Ismail, **Mahbubur Rahman** and Abusayeed Saifullah; "Extending Coverage through Integrating Multiple Low-Power Wide-Area Networks: A Latency Minimizing Approach"; in ***IEEE Transactions on Mobile Computing***; pp. 1–18; 2024.
- **Mahbubur Rahman** and Abusayeed Saifullah; "Transparent and Tamper-Proof Event Ordering in the Internet of Things Platforms"; in ***IEEE IoT Journal***; pp. 1–14; 2022.
- **Mahbubur Rahman**, Dali Ismail, Venkata Prashant Modekurthy, and Abusayeed Saifullah; "LPWAN in the TV White Spaces: A Practical Implementation and Deployment Experiences"; in ***ACM Transactions on Embedded Computing Systems***; pp. 1–25; 2021.
- **Mahbubur Rahman** and Abusayeed Saifullah; "Integrating Low-Power Wide-Area Networks for Enhanced Scalability and Extended Coverage"; in ***IEEE/ACM Transactions on Networking***; pp. 1–14; 2020.
- **Mahbubur Rahman** and Abusayeed Saifullah; "A Comprehensive Survey on Networking over TV White Spaces"; in ***Elsevier Pervasive and Mobile Computing***; pp. 1–17; 2019.
- **Mahbubur Rahman***, Abusayeed Saifullah*, Dali Ismail, Chenyang Lu, Jie Lu, and Ranveer Chandra;

"Low-Power Wide-Area Network over White Spaces"; in ***IEEE/ACM Transactions on Networking***; pp. 1–14; 2018. *First co-author. **Michael E. Conrad Outstanding Publication Award (Individual)**.

## Conference Publication

- **Mahbubur Rahman** and Abusayeed Saifullah; "Boosting Reliability and Energy-Efficiency in Indoor LoRa"; in ***ACM/IEEE IoTDI '23*** *(The 8th ACM/IEEE International Conference on Internet of Things Design and Implementation)*; pp. 1–14; 2023.
- Sezana Fahmida, Venkata Prashant Modekurthy, **Mahbubur Rahman**, and Abusayeed Saifullah; "Handling Coexistence of LoRa with Other Networks Through Embedded Reinforcement Learning"; in ***ACM/IEEE IoTDI '23*** *(The 8th ACM/IEEE International Conference on Internet of Things Design and Implementation)*; pp. 1–14; 2023.
- **Mahbubur Rahman** and Pushpen B. Goala; "Enabling Massive Scalability in Low-Power Wide-Area Networks"; in ***IEEE ICESS '22*** *(The 18th IEEE International Conference on Embedded Software and Systems)*; pp. 1–8; 2022. **Best Paper Award**.
- Venkata Modekurthy, Dali Ismail, **Mahbubur Rahman**, and Abusayeed Saifullah; "Low-latency In-Band Integration of Multiple Low-Power Wide-Area Networks"; in ***IEEE RTAS '21*** *(The 27th IEEE Real-Time and Embedded Technology and Applications Symposium)*; pp. 1–13; 2021.
- Sezana Fahmida, Venkata Modekurthy, **Mahbubur Rahman**, Abusayeed Saifullah, and Marco Brocanelli; "Long-Lived LoRa: Prolonging the Lifetime of a LoRa Network"; in ***IEEE ICNP '20*** *(The 28th IEEE International Conference on Network Protocols)*; pp. 1–12; 2020.
- **Mahbubur Rahman**, Dali Ismail, Venkata Prashant Modekurthy, and Abusayeed Saifullah; Implementation of LPWAN over White Spaces for Practical Deployment; in ***ACM/IEEE IoTDI '19*** *(The 4th ACM/IEEE Conference on Internet-of-Things Design and Implementation)*; pp. 1–12; 2019.
- **Mahbubur Rahman**, Abusayeed Saifullah; "Integrating Low-Power Wide-Area Networks in White Spaces"; in ***ACM/IEEE IoTDI '18*** *(ACM/IEEE International Conference on Internet-of-Things Design and Implementation)*; 2018.
- Venkata Prashant Modekurthy, Dali Ismail, **Mahbubur Rahman**, and Abusayeed Saifullah. "A Utilization Based Approach for Schedulability"; in ***IEEE ICII '18*** *(The 1st IEEE International Conference on Industrial Internet)*; pp. 1–10; 2018. **Best Paper Award**.
- **Mahbubur Rahman***, Abusayeed Saifullah*, Dali Ismail, Chenyang Lu, Jie Liu, and Ranveer Chandra, Enabling Reliable, Asynchronous, and Bidirectional Communication in Sensor Networks over White Spaces, in ***ACM SenSys 17*** *(15th ACM Conference on Embedded Networked Sensor Systems)*; pp. 1–14; 2017. *First co-author.
- **Mahbubur Rahman***, Dali Ismail*, Abusayeed Saifullah*, Sanjay Madria; RnR: Reverse & Replace Decoding for Collision Recovery in Wireless Sensor Networks, in ***IEEE SECON 17*** *(The 14th IEEE International Conference on Sensing, Communication and Networking)* ; pp. 1-9; 2017. *First co-author.
- Dali Ismail, **Mahbubur Rahman**, Venkata Modekurthy, and Abusayeed Saifullah, Work-in-Progress: Utilization Based Schedulability Analysis for Wireless Sensor-Actuator Networks, in ***IEEE RTAS '17*** *(The IEEE Real-Time and Embedded Technology and Applications Symposium)*; 2017.
- **Mahbubur Rahman***, Abusayeed Saifullah*, Dali Ismail, Chenyang Lu, Ranveer Chandra, and Jie Liu, SNOW: Sensor Network over White Spaces, in ***ACM SenSys 16*** *(14th ACM Conference on Embedded Networked Sensor Systems)*; pp. 272–285; 2016. * First co-author. **Best Paper Award Nominee**.

## Workshop Publication

- Venkata Modekurthy, **Mahbubur Rahman**, and Abusayeed Saifullah; "Towards Mixed Criticality Industrial Wireless Sensor-Actuator Network"; in ***ICDCN '23*** *(Proceedings of the Workshop Program of the 24th International Conference on Distributed Computing and Networking)*; pp. 1–6, 2023. **Best Paper Award.**
- Dali Ismail, **Mahbubur Rahman**, and Abusayeed Saifullah. "Low-power wide-area networks: opportunities, challenges, and directions"; in ***ICDCN '18*** *(Proceedings of the Workshop Program of the 19th International Conference on Distributed Computing and Networking)*; pp. 1–6, 2018.

## Poster/Demo Publication

- Pushpen B. Goala and **Mahbubur Rahman**; "Poster: Towards Highly Scalable Hardware-Based Implementation of Low-Power Wide-Area Networks"; in ***CUNY Graduate Center***; 2022.
- **Mahbubur Rahman**, Dali Ismail, and Abusayeed Saifullah; "Demo Abstract: Enabling Inter-SNOW Concurrent P2P Communications"; in ***ACM/IEEE IoTDI '18*** *(ACM/IEEE International Conference on Internet-of-Things Design and Implementation)*; 2018.
- Dali Ismail, **Mahbubur Rahman**, and Abusayeed Saifullah; "Demo Abstract: Implementing SNOW on Commercial Off-The-Shelf Devices"; in ***ACM/IEEE IoTDI '18*** *(ACM/IEEE International Conference on Internet-of-Things Design and Implementation)*; 2018. **Best Demo Runner-up**.
- Dali Ismail, **Mahbubur Rahman**, Venkata Modekurthy, and Abusayeed Saifullah; "Poster: Exploiting White Spaces for Low-Power Long-Range Communication"; in ***MetroCAD '18*** *(1st Metro Detroit Workshop on Connected and Autonomous Driving)*; 2018.

## Undergraduate Research

- Vadim Allayev and **Mahbubur Rahman**; "An Internet of Intelligent Things Framework for Decentralized Heterogeneous Platforms"; CUNY Queens College; arXiv:2509.10507; pp. 1–11; May 2025.
- Andrew Martin and **Mahbubur Rahman**; "Handling Hidden Terminals in Sensor Networks Over White Spaces"; Undergraduate Research; CUNY Queens College; pp. 1–10; May 2025.

## Thesis

**Mahbubur Rahman**."Low-Power Wide-Area Network Design"; Ph.D. Thesis; Department of Computer Science, Wayne State University; pp. 1–227; August 2020.

## Research Grant Proposal

- Google Cyber NYC Research Grant (2024); Title: Protocols for Tamper-Proof and Transparent Event Ordering in 5G O-RAN-based IoT Applications; PI: Mahbubur Rahman; Amount: $100k.

## Teaching

**Queens College, City University of New York**

| | |
|---|---|
| CSCI 381 | Special Topics: Quantum Computing (F '25) (SP '26) |
| CSCI 381 | Special Topics: Wireless Networks and Signals (F '24)(SP '25)(SP '26) |
| CSCI 348 | Data Communications (SP & F '22)(SP & SS '23 )(W '25) |
| CSCI 343 | Computer Architecture (F '20)(SP & F '21)(SP & F '22)(F '23)(SP '25) |
| CSCI 340 | Operating Systems Principles (SP & F '23)(SP & F '24)(F '25)(SP '26) |
| CSCI 395/350W | Research Projects (SP '25)/Senior Thesis HNRS (F '22) |

**Graduate Center, City University of New York**

CSC 82020 Advanced Wireless Networks (SP '24)

**Wayne State University**

CSC 3100 Computer Architecture and Organization (SP/S '19)
CSC 3101 Computer Architecture and Organization: Lab (F '18) (W, SP/S '19)

## Award

2023 **Best Paper Award** at ICDCN '23 IoST 5G&B Workshop
The 24th International Conference on Distributed Computing and Networking
January 4–7, 2023, IIT Kharagpur, India

2022 **Best Paper Award** at IEEE ICESS '22
The 18th IEEE International Conference on Embedded Software and Systems
December 18–21, 2022, Chengdu, China

2019 **Michael E. Conrad Outstanding Publication Award**
Department of Computer Science, Wayne State University
April 30, 2019, Detroit, MI, USA

2019 **Professional Travel Award**
College of Engineering, Wayne State University
March 8, 2019, Detroit, MI, USA

2018 **Best Paper Award** at IEEE ICII '18
The 1st IEEE International Conference on Industrial Internet
October 21-18, 2018, Bellevue, WA, USA

2018 **Best Demo Runner-up** at IEEE/ACM IoTDI '18
The 3rd ACM/IEEE Intl. Conference on Internet of Things Design and Impl.
April 17-20, 2018, Orlando, FL, USA

2017 **Travel Grant** at ACM SenSys '17
The 15th ACM Conference on Embedded Networked Sensor Systems
November 5-8, 2017, Delft, The Netherlands

2016 **Best Paper Award Nominee** at ACM SenSys '16
The 14th ACM Conference on Embedded Networked Sensor Systems
November 14-16, 2016, Stanford, CA, USA

## Professional Service

**Technical Program Committee**

ACM/IEEE Intl. Conf. on Embedded Artificial Intelligence and Sensing Sys. (SenSys) 2026-two deadlines
ACM Conference on Embedded Networked Sensor Systems (SenSys) 2025, 2022-shadow
ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDI) 2024, 2018-poster
IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS) 2024-BP
IEEE International Conf. on Embedded and Real-Time Computing Sys. and Applications (RTCSA) 2025
International Wireless Communications & Mobile Computing Conference (IWCMC) 2026
International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP) 2024, 2023
IEEE International Conference on Embedded Software and Systems (ICESS) 2022, 2021, 2020

**Journal Referee (among others)**

IEEE/ACM Transactions on Networking

IEEE Transactions on Mobile Computing
IEEE Internet of Things Journal
ACM Transactions on Sensor Networks
ACM Transactions on Cyber-Physical Systems
IEEE Transactions on Mobile Computing
IEEE Transactions on Wireless Communications
ACM Transactions on Embedded Computing Systems

## Reference

Available on request