

# MD MAHBUBUR RAHMAN

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<https://phantom.cs.qc.cuny.edu/rahman/>

## RESEARCH INTEREST

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Internet of Things and Cyber-Physical Systems  
Low-Power Wide-Area Networks and Wireless Sensor Networks  
Real-Time, Embedded, and Distributed Systems  
IoT and LPWAN Security

## EDUCATION

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

## EMPLOYMENT

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- AUG 26, 2020 - **Assistant Professor**, Department of Computer Science  
Current Queens College, City University of New York, Flushing, NY, USA
- JAN 1, 2017 - **Graduate Research/Teaching Assistant**, Department of Computer Science  
AUG 14, 2020 Wayne State University, Detroit, MI, USA
- JAN 1, 2015 - **Graduate Research/Teaching Assistant**, Department of Computer Science  
DEC 31, 2016 Missouri University of Science and Technology, Rolla, MO, USA
- NOV 2011 - **Software Engineer**  
DEC 2014 CIMSOLUTIONS Bangladesh Limited, Dhaka, Bangladesh  
Samsung R&D Institute Bangladesh Limited, Dhaka, Bangladesh  
Structured Data Systems Limited, Dhaka, Bangladesh

## GOOGLE SCHOLAR

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**Profile Link:** <https://scholar.google.com/citations?user=bNwqZZQAAAAJ&hl>  
**Number of Citations:** 400+  
**h-index:** 10 and **i10-index:** 10

## JOURNAL PUBLICATION

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- **Mahbubur Rahman** and Abusayeed Saifullah; "Transparent and Tamper-Proof Event Ordering in the Internet of Things Platforms"; in *IEEE IoT Journal*; pp. 1–13; 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

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- **Mahbubur Rahman** and Pushpen B. Goala; "Enabling Massive Scalability in Low-Power Wide-Area Networks"; in *IEEE ICSS '22 (The 18th IEEE International Conference on Embedded Software and Systems)*; pp. 1–8; 2022. (Accepted)
- 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

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- Venkata Modekurthy, **Mahbubur Rahman**, and Abusayeed Saifullah; "Towards Mixed Criticality Industrial Wireless Sensor-Actuator Network"; in *ICDCN '18 (Proceedings of the Workshop Program of the 24th International Conference on Distributed Computing and Networking)*; pp. 1–6, 2023. (Accepted)

- 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

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- **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.
- 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.

## THESIS

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

## UNDER REVISION/REVIEW/PREPARATION

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- **Mahbubur Rahman** and Abusayeed Saifullah; "Boosting Reliability and Energy-Efficiency in Indoor LoRa"; pp. 1–12; 2023. (submitted to conference)
- Sezana Fahmida, Venkata Prashant Modekurthy, Dali Ismail, **Mahbubur Rahman**, Abusayeed Saifullah; "Handling Coexistence of LoRa with Other Networks Through Embedded Reinforcement Learning"; pp. 1–12; 2023. (submitted to conference)
- Md Ashikul Haque, Abusayeed Saifullah, and **Mahbubur Rahman**; "Game-Theoretic Approach for Mitigation of Jamming in LPWAN"; pp. 1–12; 2023. (submitted to conference)
- Venkata Modekurthy, Dali Ismail, **Mahbubur Rahman**, and Abusayeed Saifullah; "Low-Latency In-Band Integration of Multiple Sensor Networks over White Spaces"; pp. 1–25; 2022. (In Preparation for Transaction/Journal)

## RESEARCH GRANT PROPOSAL

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- **Submitted/Pending** NSF Grant (2023–2027, requested amount: \$743,819)  
CAREER: Protocols for Highly Scalable, Energy-Efficient, and Low-Latency Low-Power Wide-Area Networks (PI: Mahbubur Rahman)

## TEACHING

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### Queens College, City University of New York

CSCI 348/748 Data Communications/Computer Networks (SP '22, F '22) (SP '23 - scheduled)  
CSCI 343/744 Computer Architecture/and Networks (F '20) (SP '21, F '21) (SP '22, F '22)  
CSCI 340 Operating Systems Principles (SP '23 - scheduled)

### 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

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- 2019 **Michael E. Conrad Outstanding Publication Award**  
Department of Computer Science, Wayne State University  
April 30, 2019, Detroit, MI, USA
- 2018 **Best Paper Award** at IEEE ICII '18  
1<sup>st</sup> IEEE International Conference on Industrial Internet  
October 21-18, 2018, Bellevue, WA, USA
- 2017 **Travel Grant** at ACM SenSys '17  
15<sup>th</sup> ACM Conference on Embedded Networked Sensor Systems  
November 5-8, 2017, Delft, The Netherlands
- 2016 **Best Paper Award Nominee** at ACM SenSys '16  
14<sup>th</sup> ACM Conference on Embedded Networked Sensor Systems  
November 14-16, 2016, Stanford, CA, USA

## PROFESSIONAL SERVICES

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### Technical Program Committee Member

Shadow PC - ACM Conference on Embedded Networked Sensor Systems (SenSys) 2022  
IEEE International Conference on Embedded Software and Systems (ICCESS) 2020, 2021, 2022  
Poster Track, ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDI) 2018

### Conference Referee

ACM Conference on Embedded Networked Sensor Systems (SenSys) 2017, 2018, 2020, 2022  
USENIX Symposium on Networked Systems Design and Implementation (NSDI) 2016  
IEEE International Conference on Embedded Software and Systems (ICCESS) 2020, 2021, 2022  
ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDI) 2018  
IEEE Real-Time Systems Symposium (RTSS) 2017, 2019, 2020  
IEEE Real-Time & Embedded Tech. & Applications Symposium (RTAS) 2017, 2018  
IEEE Conference on Computer Communications (INFOCOM) 2020  
ACM Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc) 2016  
IEEE International Conference on Big Data (BigData) 2019  
ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS) 2017, 2018  
IEEE International Conference on Industrial Internet (ICII) 2018, 2019  
European Conference on Wireless Sensor Networks (EWSN) 2017, 2018  
IEEE/ACM International Symposium on Quality of Service (IWQoS) 2020  
International Conference on Computer Communications and Networks (ICCCN) 2019  
IEEE Intl. Conf. on Embedded and Real-Time Computing Sys. and App. (RTCISA) 2017, 2019

### Journal Referee

IEEE/ACM Transactions on Networking (TON) 2020  
IEEE Access Journal 2019  
Computer Networks Journal (COMNET) 2021  
ACM Transactions on Sensor Networks (TOSN) 2015  
ACM Transactions on Cyber-Physical Systems (TCPS) 2016, 2018  
IEEE Transactions on Mobile Computing (TMC) 2017  
IEEE Transactions on Wireless Communications (TWC) 2019  
Elsevier Pervasive and Mobile Computing journal (PMC) 2018, 2019, 2020  
Elsevier Computer Networks 2022