

AISHA B RAHMAN

GRADUATE RESEARCH ASSISTANT

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Education

University of New Mexico, USA

Jan. 2022 – Present

Ph.D., Department of Electrical and Computer Engineering

- **Laboratory:** [Performance and Resource Optimization Lab \(PROTON Lab\)](#)
- **Research Interest:** Wireless Communication and Networks, Online Social Networks, Network Economics, Resource Allocation and Management, Cloud, Fog and Edge Computing

University of New Mexico, USA

Jan. 2022 – Dec. 2023

M.Sc., Computer Engineering

- **Laboratory:** [Performance and Resource Optimization Lab \(PROTON Lab\)](#)
- **Research Interest:** Information-Centric Networking, Resource Allocation and Management, Network Economics
- **Thesis:** A Symbiotic Content Caching Approach in Next-Generation Information-Centric Networks based on Game Theory

University of Chittagong, Bangladesh

Jan. 2019 – Feb. 2021

M.Sc., Electrical and Electronic Engineering

- **Laboratory:** [Wireless Emerging Technology Lab \(WET LAB\)](#)
- **Research Interest:** Wireless Communication, Cooperative Communication, Simultaneous Wireless Information and Power Transmission, RF Energy Harvesting
- **Thesis:** Best Relay Aided Energy Harvesting in a Multi-Relay Cooperative Network: A New Energy Harvesting Scheme

University of Chittagong, Bangladesh

Jan. 2015 – Dec. 2018

B.Sc., Department of Electrical and Electronic Engineering

Work Experience

Graduate Research Assistant

April 2023 – Present

HELIOCOMM

University of New Mexico

A joint project by the [Department of Energy, National Renewable Energy Laboratory](#) and [Sandia National Laboratories](#)

- Modelling a resilient wireless communication system for heliostat fields.
- Primary components including principles of integrated access and backhaul (IAB) technology, entropy-based routing, dynamic spectrum management, and interference mitigation.
- Simulation and emulation using Python coding and wireless emulators including OMNET++ and/or NS3.

Project Description: Solar power, as opposed to its counterpart renewable energy sources, is clean and does not produce greenhouse gases during the process of power generation. Hence, several research focusing on Concentrated Solar Plants (CSP) are being funded by the Department of Energy aiming on developing newer and more improved solar thermal facilities. The project HELIOCOMM is focused on designing a resilient wireless communication system for heliostat fields in order to take the first ever step in replacing the expensive dedicated wired communication medium within the field of tens or hundreds of thousands of heliostats.

Research Assistant

Jan. 2022 – May 2022

Performance and Resource Optimization Lab (PROTON Lab)

University of New Mexico

- Wireless Communication and Networks
- Resource Allocation and Management through Network Economics
- Cloud, Fog and Edge Computing, Edge Caching etc.
- Online Social Networks

Teaching Assistant

Jan. 2022 – May 2022

Department of Electrical and Computer Engineering

University of New Mexico

- ECE-440 Introduction to Computer Networks
- ECE-524 Network Economics

Research Assistant

May 2019 – Feb. 2021

Wireless Emerging Technology Lab (WET LAB)

University of Chittagong

- Wireless Cooperative Communication
- RF Energy Harvesting
- Simultaneous Wireless Information and Power Transmission (SWIPT)

Volunteering Experience

Chair

Aug. 2022 – Present

IEEE Women in Engineering Affinity Group Albuquerque Section

- Organizing and conducting monthly public talks, workshops, and other volunteering activities for promoting women engineers and scientists.
- Former Vice-Chair from Feb. 2022 - Aug. 2022.

Technical Program Committee (TPC) Member and Peer Reviewer (Verified by [Web of Science](#))

IEEE Conferences

- IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids 2023, Glasgow Scotland.
- 3rd International Conference on Electrical, Computer and Communication Engineering (ECCE 2023), Chattogram, Bangladesh.
- IEEE GLOBECOM 2022 Green Communication Systems & Networks, Rio de Janeiro, Brazil.
- IEEE International Symposium on Computers and Communications 2022, Rhodes Island, Greece.
- IEEE Internet of Things Journal, July 2023.

Technical Skills

Languages: Python, MATLAB, C

Software/Tools: Jupyter Notebook, Visual Studio Code, MATLAB, OMNET++, RadioShark, Reinforcement Learning

Other skills: Adobe Illustrator, Adobe Photoshop

Publications — [Google Scholar](#)

Journals

- M. S. Siraj, **A. B. Rahman**, M. Diamanti, E. E. Tsiropoulou, S. Papavassiliou, "Alternative Positioning, Navigation, and Timing in Satisfaction Form and Reconfigurable Intelligent Surfaces, in IEEE Systems Journal, doi: 10.1109/JSYST.2023.3268989.
- **A. B. Rahman**, M. F. Kader, "A new energy harvesting scheme for multi-relay cooperative networks", Digital Signal Processing, Volume 133, March 2023. doi: 10.1016/j.dsp.2022.103846
- P. Khan et al., Machine Learning and Deep Learning Approaches for Brain Disease Diagnosis: Principles and Recent Advances," in IEEE Access, vol. 9, pp. 37622-37655, 2021, doi: 10.1109/ACCESS.

Conferences

- **A. B. Rahman**, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou, "Information-Centric Networking Cache Memory Allocation: A Network Economics Approach", IEEE GLOBECOM 2023. (Accepted)
- **A. B. Rahman**, J. Patrizi, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou, "Bioinspired Dynamic Spectrum Management in 3D Networks", IEEE DCOSS-IoT 2023. (To appear)
- M. S. Siraj, **A. B. Rahman**, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou, "Positioning, Navigation, and Timing on the Air", IEEE DCOSS-IoT 2023. (To appear)
- **A. B. Rahman**, P. Charatsaris, M. S. Siraj, E. E. Tsiropoulou, "Symbiotic Content Caching in Next-Generation Information-Centric Networking", IEEE DCOSS-IoT 2023. (To appear)
- **A. B. Rahman**, M. S. Siraj, E. E. Tsiropoulou, S. Papavassiliou, "Mutualistic Compute Continuum: A Network Economics Analysis", IEEE ICC, 2023. (To appear)
- A. Adesokan, M. S. Siraj, **A. B. Rahman**, E. E. Tsiropoulou, S. Papavassiliou, "How to become an Influencer in Social Networks", IEEE ICC 2023. (To appear)
- M. S. Siraj, **A. B. Rahman**, M. Diamanti, E. E. Tsiropoulou, S. Papavassiliou and J. Plusquellic, "Orchestration of Reconfigurable Intelligent Surfaces for Positioning, Navigation, and Timing," MILCOM 2022 - 2022 IEEE Military Communications Conference (MILCOM), Rockville, MD, USA, 2022, pp. 148-153, doi: 10.1109/MILCOM55135.2022.10017665.
- **A. B. Rahman**, M. S. Siraj, N. Kubiak, E. E. Tsiropoulou and S. Papavassiliou, "Network Economics-based Crowdsourcing in Online Social Networks," GLOBECOM 2022 - 2022 IEEE Global Communications Conference, Rio de Janeiro, Brazil, 2022, pp. 4655-4660, doi: 10.1109/GLOBECOM48099.2022.10001611.
- **A. B. Rahman** and M. F. Kader, "Best Relay Transmission Aided Energy Harvesting in a Multi Relay Cooperative Network," 2020 IEEE Region 10 Symposium (TENSYP), Dhaka, Bangladesh, 2020, pp. 106-109, doi: 10.1109/TENSYP50017.2020.9230985.
- **A. B. Rahman**, M. S. Kamal and A. Islam, "Bridge Strength Preservation by Automatic Traffic Density Control: an IoT Application," 2019 1st International Conference on Advances in Science, Engineering and Robotics Technology (ICASERT), Dhaka, Bangladesh, 2019, pp. 1-5, doi: 10.1109/ICASERT.2019.8934520.

Honors and Awards

IEEE Albuquerque Section Service Award 2023

IEEE Albuquerque Section

2023

Albuquerque, NM, USA

2022 Women in Technology Scholarship

Cadence Design Systems

2022

California, USA

Merit-based Education Board Scholarship

M.Sc. Degree Program, University of Chittagong

2019-2021

Chittagong, Bangladesh

1st Position in Project Showcasing

1st APECE Project Competition, University of Chittagong

2018

Chittagong, Bangladesh

2nd Runners Up in Project Showcasing

EDU Engineering Day, East Delta University

2018

Chittagong, Bangladesh

Merit-based Education Board Scholarship

B.Sc. Degree Program, University of Chittagong

2015-2018

Chittagong, Bangladesh

General Grade Scholarship

Education Board Bangladesh

2009

Dhaka, Bangladesh