Aisha B. Rahman

505-464-5157 arahma85@asu.edu aisharahman.github.io aisha-b-rahman

Highlights

• 3 years of experience in simulation and data analysis using Python for research work on building distributed decision-making policies for complex heterogeneous networks through constrained optimization problems and/or Reinforcement Learning to optimize performance and resource allocation in heterogeneous networks including 5G/6G networks, *Sustainable* computing systems, federated learning systems, distributed energy resource systems, etc.
• Hands-on experience in building a Machine Learning (ML) pipeline. Directly contributed to the development of ML pipeline for malware detection in electric vehicles' charging networks. Different ML classifiers for malware detection were explored following the collection of large datasets and feature engineering.
• Experience in cutting-edge wireless technology components including Integrated Access and Backhaul Networks, Reconfigurable Intelligent Surfaces, Simultaneous Wireless Information and Power Transfer, etc., with 1+ year of experience using OMNeT++ network simulator.
• 1+ years experience using High-Performance Computing (HPC) systems for simulation-based experiments.
• Demonstrated strong teamwork and collaborative skills by working closely with cross-functional teams, including scientists from national labs on two U. S. Department of Energy-funded projects.

Technical Skills

• **Programming Languages**: Python, C++, MATLAB, SQL.
• **Machine Learning and Deep Learning Frameworks**: Scikit-Learn, PyTorch, TensorFlow.
• **Data Analysis**: Data cleaning, processing, and visualizations.
• **Others**: HPC, Docker, Research problem formulation, Research/Technical paper writing

Education

• **Arizona State University** **May 2026 (Expected)**
Ph.D., School of Electrical, Computer and Energy Engineering

Research Interest: Applications of optimization tools and/or artificial intelligence including supervised, unsupervised, and reinforcement learning for resource and performance optimization in heterogeneous networks including 5G/6G wireless communication networks, *Sustainable* computing environments, federated learning systems, and distributed energy resource (DER) systems.

Relevant Coursework: EEE 554: Probability and Random Processes, EEE 598: AI-based Decision-making in Dynamic Systems.

• **University of New Mexico, USA** **Dec. 2023**
M.Sc, Computer Engineering (with Distinction) *GPA 4.23/ 4.00*

Relevant Coursework: ECE 537: Foundations of Computing, ECE 517: Machine Learning, ECE 595: Reinforcement Learning, ECE 540: Advanced Computer Networks.

• **University of Chittagong, Bangladesh** **Feb. 2021**
M.Sc, Electrical and Electronic Engineering *GPA 3.64/ 4.00*

• **University of Chittagong, Bangladesh** **May 2019**
B.Sc., Department of Electrical and Electronic Engineering *GPA 3.68/ 4.00*

Work Experience

Graduate Research Associate **Jan 2025 – Present**
Performance and Resource Optimization Lab (PROTON Lab) *Arizona State University*

Projects:

***Goaltender**: Cloud-based Defense and Response Tools for DER Ecosystem; Funded by U. S. Department of Energy*

- Modeling and building a machine learning pipeline for robust and efficient malware detection in EV charging networks.
- Testing various charge points in combination with different CSMS implementations to generate and analyze OCPP payloads.
- Collection, parsing and preprocessing of large, labeled dataset of OCPP 2.0.1 JSON payloads between EV charge point and CSMS.

- Exploring and evaluating multiple machine learning models for malware detection, considering supervised and unsupervised learning methods.

Technical Skills: Languages– Python, SQL, Tools/Framework– Supervised and unsupervised machine learning, Deep Learning, Scikit-Learn, Tensorflow, PyTorch, Docker.

***HELIOCOMM**: A Resilient Wireless Heliostats Communication System;* *Funded by U. S. Department of Energy*

- Modeling a resilient wireless communication system for heliostat fields to replace conventional wired networks using next-generation wireless technologies and reinforcement learning.
- Simulation and emulation using Python coding and wireless emulators including OMNET++ and/or NS3.
- Testing of the developed system in large scale for available direct normal irradiation and heliostats mirror orientation dataset in high-performance computing (HPC) environments.

Technical Skills: Languages– Python and C++, Tools/Framework– Reinforcement learning, OMNET++, HPC.

Graduate Research Assistant **Jan. 2022 – Dec. 2024**

Department of Electrical and Computer Engineering *University of New Mexico*

- Conducting research under the two stated DoE-funded projects listed above.

Teaching Assistant **Jan. 2022 – May 2022**

Department of Electrical and Computer Engineering *University of New Mexico*

- ECE-440 Introduction to Computer Networks

Research Assistant **May 2019 – Feb. 2021**

Wireless Emerging Technology Lab (WET LAB) *University of Chittagong*

- Conducting research on cutting-edge wireless technologies including cooperative communication, simultaneous wireless information and power transmission, and RF energy harvesting.

Selected Publications (Google Scholar) and Presentations

Technical Papers

- **A. B. Rahman**, A. M. Panteleaki, I. Anagnostopoulos, E. E. Tsiropoulou, "Cloudonomics: Cloud Computing Economics Incentivizing Sustainable Cloud Usage", in IEEE Transactions on Sustainable Computing (Under Review).
- **A. B. Rahman**, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou "Symbiotic Resource Pricing in the Computing Continuum Era", in IEEE Transactions on Mobile Computing, doi: 10.1109/TMC.2025.3542017.
- M. Diamanti, **A. B. Rahman**, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou, "Resource Allocation as a Market: A Case Study on Multi-Server Multi-Model Federated Learning", in 20th Wireless On-demand Network systems and Services Conference 2025 (Accepted).
- S. Tsikteris; **A. B. Rahman**, M. S. Siraj,, E. E Tsiropoulou, "TRUST-ME: Trust-Based Resource Allocation and Server Selection in Multi-Access Edge Computing", Future Internet 2024, 16, 278.
- **A. B. Rahman**, Y. S. Chen, E. E. Tsiropoulou, S. Papavassiliou, "SynergyWave: Bandwidth Splitting and Power Control in Integrated Access and Backhaul Networks", ICC 2024 - IEEE International Conference on Communications, Denver, CO, USA, 2024, pp. 31-36, doi: 10.1109/ICC51166.2024.10622392.
- **A. B. Rahman**, O. D. Pantaleon, E. E. Tsiropoulou, "NEMESIS: No-Regret E-health User Experience in Multi-Access Edge Computing Systems", IEEE ICC 2025 (Accepted).
- **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.
- **A. B. Rahman**, J. Patrizi, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou, "Bioinspired Dynamic Spectrum Management in 3D Networks", 2023 19th International Conference on Distributed Computing in Smart Systems and the Internet of Things (DCOSS-IoT), Pafos, Cyprus, 2023, pp. 166-170, doi: 10.1109/DCOSS-IoT58021.2023.00038.
- **A. B. Rahman**, P. Charatsaris, E. E. Tsiropoulou, S. Papavassiliou, "Information-Centric Networking Cache Memory Allocation: A Network Economics Approach", GLOBECOM 2023 - 2023 IEEE Global Communications Conference, Kuala Lumpur, Malaysia, 2023, pp. 1259-1264, doi: 10.1109/GLOBECOM54140.2023.10437315.

Technical Reports

- E. E. Tsiropoulou, **A. B. Rahman**, and M. S. Siraj, "HELIOCOMM: Wireless Controls State-of-the-Art Report", 2024, Golden, CO: National Renewable Energy Laboratory. NREL/SR-5K00-88431.

Magazines

- E. E. Tsiropoulou, **A. B. Rahman**, M. S. Siraj, "HELIOCOMM: A Wireless Revolution in Concentrated Solar Power Systems," in IT Professional, vol. 26, no. 3, pp. 73-79, May-June 2024, doi: 10.1109/MITP.2024.3389502

Oral Presentations

- Conference presentation for accepted papers at 2022 Global Communications Conference and 2024 International Conference on Communications.
- Poster presentation on "Information-centric Networking Cache Memory Allocation: A Network Economics Approach" at The LoboBITES Research Poster Presentation 2023, Shared Knowledge Conference, University of New Mexico, Albuquerque, New Mexico, USA.
- Presentation on progress and updates during biweekly and quarterly meetings with Sandia National Laboratories and National Renewable Energy Laboratory for the project HELIOCOMM: A Resilient Wireless Heliostats Communication System, funded by the U. S. Department of Energy.
- Presentation on progress and updates during biweekly meetings with Sandia National Laboratories and Distributed Energy Resources Security Corp for the project Goaltender: Cloud-Based Defense and Response Tools for DER Ecosystem, funded by the U. S. Department of Energy.

Volunteering and Leadership Experience

Technical Program Committee (TPC) Member and Peer Reviewer

IEEE Conferences and Journals

- IEEE Internet of Things Journal, IEEE Transactions on Green Communications and Networking, IEEE Access, IEEE WCNC 2025, IEEE SmartGridComm 2023, IEEE ISCC 2022.

Chair — Aug. 2022 – Dec. 2024

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.

Chapter Vice-chair — Dec. 2023 – Dec. 2024

IEEE Albuquerque Section Communications Society and Computer Society Joint Chapter

- Organizing and conducting monthly public talks, workshops, and webinars.

Web Co-Chair — Mar. 2025 - Oct. 2025

IEEE CAMAD 2025

- Content management and website maintenance for the conference.

Honors and Awards

IEEE Albuquerque Section Outstanding Graduate Student Award 2024 — **2024**
IEEE Albuquerque Section — *Albuquerque, NM, USA*

IEEE Albuquerque Section Service Award 2023 — **2023**
IEEE Albuquerque Section — *Albuquerque, NM, USA*

2022 Women in Technology Scholarship — **2022**
Cadence Design Systems — *California, USA*