Md Sadman Siraj

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Education

University of New Mexico, USA **January 2022 – January 2026 (Expected)**

Ph.D., Department of Electrical and Computer Engineering

- **Laboratory**: Performance and Resource Optimization Lab (PROTON Lab)
- **Research Interest**: Alternative Positioning, Navigation and Timing, Wireless Communication and Networks Network Economics, Resource Allocation and Management

University of New Mexico, USA **January 2022 – December 2023 (Expected)**

M.Sc, Computer Engineering

- **Laboratory**: Performance and Resource Optimization Lab (PROTON Lab)
- **Research Interest**: Symbiotic Positioning, Navigation and Timing Game Theory, Reinforcement Learning
- **Thesis**: A Bio-inspired Alternative Positioning, Navigation, and Timing Approach based on a Potential Game-theoretic Model

University of Dhaka, Bangladesh **January 2016 – March 2020**

B.Sc, Electrical and Electronic Engineering

- **Research Interest**: Human Activity Recognition Machine Learning, Deep Learning

Work Experience

Research Assistant **April 2023 – Present**

HELIOCOMM, A Project funded by the Department of Energy

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

Research Assistant **June 2022 – Present**

Performance and Resource Optimization Lab (PROTON Lab) *University of New Mexico*

- Alternative Positioning, Navigation and Timing
- Wireless Communication and Networks
- Resource Allocation and Management through Network Economics
- Online Social Networks
- Integrated Sensing and Communication

Teaching Assistant **January 2022 – May 2022**

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

- ECE-314L Signals and Systems
- ECE-360 Electromagnetic Fields and Waves
- ECE-381 Introduction to Power Systems

Online Course Instructor **June 2020 – December 2021**

Upskill *Bangladesh*

- Python Programming Fundamentals: Variables, Expressions, Conditionals, Loops, Functions
- Data Structures: Strings, Files, Lists, Dictionaries, Tuples
- Web Data in Python: Regular Expressions, Sockets, URLlibs, HTTP, XML, JSON
- Database in Python: Tables, DBMS, Relations, SQL, SQLite, RDBMS

Volunteering Experience

Technical Program Committee (TPC) Member

IEEE Conferences

- IEEE International Conference on High Performance Switching and Routing, Albuquerque, USA.
- IEEE GLOBECOM 2022 Green Communication Systems & Networks, Rio de Janeiro, Brazil.
- IEEE International Symposium on Computers and Communications 2022, Rhodes Island, Greece.

Chair **August 2019 – August 2021**

IEEE Student Branch University of Dhaka

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

Technical Skills

Languages: Python, MATLAB, C, C++, SQL
Software/Tools: Deep Learning with Keras, Reinforcement Learning in Python, Unix/Linux, Network Simulation in OMNET++/NS3
Other skills: Research and open data aggregation, Data cleaning and processing, Excellent visualizations, Collaborative project management, Advanced presentation skills

Publications — Google Scholar

Journal Publications

- **M. S. Siraj**, A. B. Rahman, M. Diamanti, E. E. Tsiropoulou, and S. Papavassiliou, "Alternative positioning, navigation, and timing enabled by games in satisfaction form and reconfigurable intelligent surfaces," IEEE Systems Journal, vol. 17, no. 3, pp. 5035–5046, 2023.
- **M. S. Siraj**, E. E. Tsiropoulou, S. Pavassiliou, and J. Plusquellic, "Symbiotic positioning, navigation, and timing based on game theory and reinforcement learning", IEEE Journal on Selected Areas in Communications. (Under Review)
- N. Kemp, **M. S. Siraj**, and E. E. Tsiropoulou, "Coalitional demand response management in community energy management systems," Energies, vol. 16, no. 17, 2023.

Conference publications

- **M. S. Siraj**, E. E. Tsiropoulou, S. Papavassiliou, and J. Plusquellic, "SAFE: Secure symbiotic positioning, navigation, and timing," in GLOBECOM 2023 - 2023 IEEE Global Communications Conference, 2023. (Accepted)
- **M. S. Siraj**, A. B. Rahman, P. Charatsaris, E. E. Tsiropoulou, and S. Papavassiliou, "Positioning, navigation, and timing on the air," in 2023 19th International Conference on Distributed Computing in Smart Systems and the Internet of Things (DCOSS-IoT), pp. 661–668, 2023.
- **M. S. Siraj**, A. B. Rahman, E. E. Tsiropoulou, S. Papavassiliou, and J. Plusquellic, "Symbiotic positioning, navigation, and timing," in 2023 19th International Conference on Distributed Computing in Smart Systems and the Internet of Things (DCOSS-IoT), pp. 261–268, 2023.
- **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," in MILCOM 2022 - 2022 IEEE Military Communications Conference (MILCOM), pp. 148–153, 2022.
- **M. S. Siraj**, M. S. Hossain, R. Brown, E. E. Tsiropoulou, and S. Papavassiliou, "Incentives to learn: A location-based federated learning model," in 2022 Global Information Infrastructure and Networking Symposium (GIIS), pp. 40–45, 2022.

Honors and Awards

IEEE Outstanding Graduate Engineering Student Award 2023 **2023**
IEEE Albuquerque Section *Albuquerque, NM, USA*

ECE Outstanding Student Teaching Award 2023 **2023**
Department of Electrical and Computer Engineering, University of New Mexico *Albuquerque, NM, USA*

Nominated for Outstanding Graduate Award 2023 **2023**
Department of Electrical and Computer Engineering, University of New Mexico *Albuquerque, NM, USA*

Nominated as a Finalist for The LoboBITES competition **2022**
Department of Electrical and Computer Engineering, University of New Mexico *Albuquerque, NM, USA*

Science for Mankind Research Award **2019**
DUSS, University of Dhaka *Dhaka, Bangladesh*