

MD SADMAN SIRAJ

COMPUTER ENGINEERING PH.D. CANDIDATE GRADUATING IN SPRING, 2026

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PROFESSIONAL SUMMARY

- 4 years of Ph.D. research experience focusing on developing distributed decision-making algorithms using Applied Artificial Intelligence and Game Theory for alternative localizations, wireless networks design and cybersecurity with trust in cyber-physical systems
- 3 years of experience in using High-Performance Computing (HPC) systems
- Built an ML pipeline to detect malicious modifications in wireless packets for Goaltender research project (U.S. DOE), gaining expertise in machine learning and deep learning
- Designed and deployed a wireless testbed enabling multi-node wireless networking experiments for HELIO-COMM research project (U.S. DOE), developing skills in wireless communications and embedded systems
- Developed contract-theory-based trust models and evaluated them on 20 FPGA ZYBO-Z7-10 boards with PUFs for CBDC research project (Bank of Canada), advancing expertise in cybersecurity and hardware trust
- Strong and consistent record of publications throughout the Ph.D. program

EDUCATION

• Ph.D., Computer Engineering

May 2026 (Expected)

Arizona State University, USA

CGPA 4.17

Research Interests: Applied artificial intelligence including supervised, unsupervised, reinforcement and federated learning, alternative localizations, wireless communications, networks and systems, and distributed energy resources (DERs)

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

• M.Sc., Computer Engineering (with Distinction)

December 2023

University of New Mexico, USA

CGPA 4.21

Relevant Coursework: Network Economics, Machine Learning, Foundations of Computing, Advanced Networking, Hardware-oriented Security and Trust, and Reinforcement Learning

SKILLS

- **Programming Languages:** Python, MATLAB, C, C++, SQL
- **Hardware Programming:** nRF7002, nRF5340 System-on-Chips (SoCs), FPGA ZYBO Z7-10, ADALM-Pluto SDR
- **Libraries and Tools:** Scikit-learn, Tensorflow, PyTorch, Pandas, SciPy, HPC, DSP in MATLAB, Linux, SLURM, Git, Docker, RF, WiFi-6, Zigbee, BLE, nRF ESB, IEEE 802.11/802.15.4 wireless protocols
- **Software Development Tools:** nRF SDK, NS3, Android Studio, GNU Radio, Eclipse
- **Other skills:** Research and open data aggregation, data cleaning and processing, parallel processing, excellent visualizations, collaborative project management, advanced presentation skills

EXPERIENCE

Graduate Research Associate, Arizona State University

January 2025 – Present

Performance and Resource Optimization in Networks Laboratory

Continued Attendance from UNM

- Trained AI models to detect malicious modifications in wireless packets for electric vehicle charging networks.
- Developed contract theory-based trust models for hardware-oriented cybersecurity in digital currency exchange.
- Deployed a wireless testbed enabling multi-node wireless communication with low-latency wireless traffic.

Graduate Research Assistant, University of New Mexico

January 2022 – December 2024

Performance and Resource Optimization in Networks Laboratory

Transferred to ASU

- Developed simulation frameworks to model and evaluate distributed decision-making algorithms for complex cyber-physical systems using artificial intelligence and game theory for solving alternative localization challenges in GPS/GNSS-denial scenarios and resource allocation problems in wireless networks.

PROJECTS

GOALTENDER Research Project (funded by U. S. Department of Energy)

January 2024 – Present

Collaborated with a team from Sandia National Laboratories (SNL)

- Developed an autoencoder-based malicious user behavior detection in electric vehicle (EV) charging networks for detecting stealthy under-billing, over-billing, and spoofing state of charge attacks using artificial intelligence with 97.9%, 80.84% and 94% F1 score, respectively.
- Explored data processing techniques using SQL and used machine learning/deep learning models using PyTorch and Tensorflow for EV charging anomaly detection in large-scale Open ChargePoint Protocol (OCPP) datasets.

PEERTRUST Research Project (funded by Bank of Canada)

December 2023 – Present

- Built a secured and trusted digital currency exchange system using reinforcement learning and Physical Unclonable Function (PUF) for peer-based authentication which can be effectively used in distributed and offline configurations, eliminating the need for persistent connectivity to a centralized authority.

HELIOPCOMM Research Project (funded by U. S. Department of Energy)

April 2023 – Present

Collaborated with a team from National Renewable Energy Laboratory (NREL)

- Designed and modeled a resilient wireless communication system using IEEE 802.11/802.15.4 wireless protocols and reinforcement learning in Python, introducing the first wireless network system design and research in the USA for heliostat fields.
- Validated the efficiency and reliability of the wireless network design with large-scale system performance simulations in HPC environments, manifesting very low communication delays ranging from 250 millisecond to 2 second.

NOTABLE PUBLICATIONS and PRESENTATIONS

Google Scholar: scholar.google.com/citations?user=S5HhON8AAAAJ

Technical Papers

- M. S. Siraj, P. Charatsaris, M. Diamanti, E. E. Tsiropoulou, and S. Papavassiliou, "HEROES: Humanitarian Emergency Response based on UAV-enabled Integrated Sensing and Communication, Positioning, and Satisfaction Games," in ACM J. Auton. Transport. Syst. 2, 4, Article 15 (December 2025), 26 pages.
- M. S. Siraj, J. R. Atencio, and E. E. Tsiropoulou, "PANTHER: A Power-Optimized and Accurate Positioning, Navigation, and Timing With High Efficiency and Reliability," in IEEE Open Journal of the Communications Society, vol. 6, pp. 3265-3279, 2025.
- 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," in IEEE Systems Journal, vol. 17, no. 3, pp. 5035–5046, 2023.
- M. S. Siraj, A. B. Rahman and E. E. Tsiropoulou, "Seasonal Dynamics of Wireless Communications in Concentrated Solar Power Fields," in 2025 IEEE 31st International Symposium on Local and Metropolitan Area Networks (LANMAN), Liile, France, 2025, pp. 1-6.
- M. S. Siraj, A. B. Rahman, C. Minwalla, E. E. Tsiropoulou and J. Plusquellec, "Sourcing Trust From Peers with Physical Unclonable Functions," in 2025 IEEE International Symposium on Hardware Oriented Security and Trust (HOST), San Jose, CA, USA, 2025, pp. 268-278.
- M. S. Siraj, A. B. Rahman and E. E. Tsiropoulou, "Energy Efficiency and Latency Optimization in Wireless Concentrated Solar Power Fields," in 2024 IEEE 10th World Forum on Internet of Things (WF-IoT), Ottawa, ON, Canada, 2024, pp. 870-875.
- M. S. Siraj, M. A. A. Faisal, O. Shahid, F. F. Abir, T. Hossain, S. Inoue, and M. A. R. Ahad, "UPIC: user and position independent classical approach for locomotion and transportation modes recognition," in Adjunct Proceedings of the 2020 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2020 ACM International Symposium on Wearable Computers (UbiComp/ISWC '20 Adjunct). Association for Computing Machinery, New York, NY, USA, 340–345.

Technical Reports

- Tsiropoulou, Eirini Eleni, Aisha B. Rahman, and Md Sadman Siraj. 2024. HELIOPCOMM: Wireless Controls State-of-the-Art Report. Golden, CO: National Renewable Energy Laboratory. NREL/SR-5K00-88431.

Oral Presentations

- Conference paper presentations at the 2022 IEEE GIIS, 2024 IEEE ICC and 2025 IEEE HOST
- Presentation on progress and updates during biweekly and quarterly meetings with National Renewable Energy Laboratory and Sandia National Laboratories for DOE-funded projects

PROFESSIONAL SERVICES

- Chapter Chair, IEEE Albuquerque Section ComSoc and CS Joint Chapter (2023-2024)
- Technical Program Committee (TPC) Member, IEEE International Conference on High Performance Switching and Routing, 5-7 June 2023, Albuquerque, USA
- Peer Reviewed 21 technical articles including journal papers, conference papers, posters and demonstrations (verified by Web of Science)

Web of Science Profile: webofscience.com/wos/author/record/IVH-7378-2023

HONORS AND AWARDS

University Graduate Fellowship

Arizona State University

2025

Tempe, AZ, USA

IEEE Service Award 2024

IEEE Albuquerque Section

2024

Albuquerque, NM, USA

IEEE Outstanding Graduate Engineering Student Award 2023

IEEE Albuquerque Section

2023

Albuquerque, NM, USA

ECE Outstanding Student Teaching Award 2023

Department of Electrical and Computer Engineering, University of New Mexico

2023

Albuquerque, NM, USA