Dr. Muhammad Majid Aziz

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Career Objective:

Motivated researcher with Ph.D. in Electrical Engineering, specializing in signal processing, wireless communications, and the application of machine learning (ML) and reinforcement learning (RL). Skilled in algorithm development, system optimization, and advanced signal processing techniques, including the transformation of wireless communication algorithms into ML/RL models. Seeking a research role to drive innovation and contribute to cutting-edge advancements in ML and RL for national security and technological progress within a dynamic and collaborative environment.

Education:

- **PhD Electrical Engineering, Institute of Space Technology, Islamabad, Jan 2025**

  (Secialization in Wireless Communication)

- **MS Electronic Engineering, Mohammad Ali Jinnah University Islamabad, MAJU, 2015**

  (Secialization in Wireless Communication)

- **B.Sc. Electronic Engineering, Sir Syed University of Engg. & Technology, Karachi, 2011**

Courses:

- Advance Digital Image Processing
- Machine Learning
- Optimization in Wireless Communication & Signal Processing
- Stochastic Process
- Cognitive Radio Communication
- Advance Digital Communication
- Advance Wireless Communication

Research Interests:

- Machine Learning
- Reinforcement Learning
- Wireless Communication
- Radar Signal Processing
- Radar Jamming and Anti-jamming
- Intelligent Reflecting Surfaces
- Convex Optimization for Wireless Communication
- NOMA/OMA

Publications:

- Aziz, M. J., Habib, A., Maud, A. R., Zafar, A., & Irtaza, S. A. (2024b). Anti-Jamming Radar Waveform Design for Repeater Jammer using Reinforcement Learning. **Vehicular Communications**, 100768. https://doi.org/10.1016/j.vehcom.2024.100768

- Aziz, A. Habib, and A. Zafar, "Reconfigurable Intelligent Surfaces Assisted NLOS Radar Anti Jamming Using Deep Reinforcement Learning," https://doi.org/10.1016/j.phycom.2024.102533

- M. M. Aziz, A. R. M. Maud and A. Habib, "Reinforcement Learning Based Techniques for Radar Anti-Jamming," 2021 International Bhurban Conference on Applied Sciences and Technologies (IBCAST), 2021, pp. 1021-1025, https://doi: 10.1109/IBCAST51254.2021.9393209

- RIS Assisted Beyond Diagonal Secrecy Capacity Maximization For Future Networks **(In-Process)**

- Reinforcement Learning Based Energy-efficient JT-CoMP enabled framework with adaptive OMA/NOMA in HetNets **(In-Process)**

Technical Skills:

- **Software**: MATLAB, Anaconda, GENEX Assistant, Actix Analyzer, TEMS, MS Office, Latex (Technical Writing), Overleaf
- **Programming Languages**: MATLAB, Python, Latex (For Technical Writing)

Professional Experience:

1. 5G NR System Post Processor **(Remote Job)**

2. Graduate Research Assistant (Institute of Space Technology, **Islamabad**) **(Sep 2017 Oct 2023)**

3. RF Engineer, TURNO TECH Pvt. LTD., Pakistan **(April 2015 - Feb 2017)**

Key Strengths:

- Demonstrated strong research and analytical skills with expertise in wireless communication, radar signal processing, and the development of machine learning and deep learning models, including reinforcement learning-based techniques.
- Proficient in MATLAB, Python, LaTeX, Actix Analyzer, and GENEX Assistant for technical analysis and documentation.
- Proven experience in transforming traditional wireless communication algorithms into reinforcement learning (RL) models to achieve improved system performance and optimization.

- Strong problem-solving capabilities with a demonstrated ability to work efficiently in multidisciplinary teams.

References:

1. Dr. Adnan Zafar

   HOD Electrical Engineering Dept. – Institute of Space Technology,

   Islamabad adnan.zafar@ist.edu.pk

2. Dr. Aamir Habib

   Associate Professor - Institute of Space Technology, Islamabad

   habib.aamir@gmail.com

3. Dr. Khurrum Khurshid

   HOD Computer Science Dept. – Institute of Space Technology, Islamabad

   hod.comp@ist.edu.pk