Abdullah Al Noman

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Education

Ph.D. in Computer Science 2025 – Present
University of Texas at Arlington, USA *CGPA: 3.6/4.0*
Transformative Wireless Systems and Technology (TWiST) Lab
PhD Supervisor: **Dr. Debashri Roy**

Research Focus: Space–Air–Ground Integrated Networks (SAGIN), Satellite Communications, Non-Terrestrial Networks (NTN), O-RAN (Open Radio Access Network), Next-Generation (NextG) Wireless Networks

Bachelor of Technology (B.Tech.) in Computer Science & Engineering 2020 – 2024
National Institute of Technology Tiruchirappalli, India *CGPA: 7.51 / 10.00 (75.1%)*

Publications

- **A. A. Noman**, T. T. Sari, S. Amatare, G. Secinti, and D. Roy. "Space-Air-Ground Network for Direct-to-Cell Communication," *IEEE Military Communications Conference (MILCOM)*, Los Angeles, USA, Oct. 2025. (Accepted) Available on SSRN
- M. Priyadarsini, **A. A. Noman**, V. Patel, and S. Prakash. "A Reliable and Secure Multicast Transport Protocol for Space-Ground Integrated Networks using RBAC," *15th International Conference on Computing Communication and Networking Technologies (ICCCNT), IEEE, 2024*. DOI:10.1109/ICCCNT61001.2024.10725800

Internships

Indian Institute of Technology Ropar May 2023 – July 2023
Machine Learning Intern *Punjab, India*

- Developed and implemented machine learning algorithms for **image enhancement and green screen removal** tasks, optimizing real-time processing.
- Achieved significant improvements in processing time and accuracy **(93%)** compared to existing models, leading to more efficient solutions.

National Institute of Technology Tiruchirappalli May 2022 – Aug 2022
Summer Research Intern *Tamil Nadu, India*

- Led the development of an **Intrusion Detection System (IDS)** for smart homes using Raspberry Pi, leveraging IoT devices to monitor and detect unauthorized activities.
- Collected and analyzed data from a network of sensors, integrating with a central control unit to trigger alarms and send notifications in case of intrusion.

Projects

Development of an O-RAN System | *Open Air Interface (OAI) 5G NR, Near-RT RIC, xApps*

- Actively contributing to the design and implementation of an O-RAN (Open Radio Access Network) system at TWiST lab to enhance network flexibility and interoperability.
- Developing and optimizing the RAN Intelligent Controller (RIC) for real-time decision-making in wireless communication.

Spherical Interpolation for Real-Time Emitter Navigation | *Software-Defined Radio, OctoClock, MATLAB*

- Built a synchronized 4-node USRP SDR system using OctoClock to enable coherent IQ capture and TDOA-based localization.

- Implemented and evaluated a mobility-robust Spherical Interpolation (SI) localization pipeline, validated through indoor static and mobile experiments.

Secure and Reliable Multicast Transport Protocol for Space–Ground Integrated Networks | *NS-2*, *Python*, *Secure Multicast*
- Designed a reliable and secure multicast transport protocol for space–ground integrated networks using role-based access control (RBAC) to mitigate security and reliability vulnerabilities.
- Implemented an intermediary-based communication framework with automated role verification and anomaly detection, enabling fault tolerance through backup intermediary activation.
- Evaluated system performance through experimental analysis, achieving 13.5 Mbps throughput, 0.004% packet delivery ratio (PDR), low transmission delay, and improved anomaly detection accuracy.

Speech Emotion Analyzer | *Python*, *Speech Processing*, *Deep Learning*
- Developed a speech emotion analyzer using **machine learning** to classify emotions from spoken language.
- Extracted acoustic features from audio recordings and applied them to a **deep learning model** for precise emotion detection.
- Evaluated model performance on labeled speech datasets to assess classification accuracy and generalization.

Crack Detection on a Wall | *Python*, *OpenCV*, *Computer Vision*, *Image Segmentation*
- Developed an image processing pipeline utilizing **edge detection** and texture analysis for accurate crack localization.
- Enhanced model accuracy to 98% using contour mapping, histogram equalization, and advanced segmentation techniques.

Technical Skills

Programming Languages: C, C++, Python, Dart
Web Technologies: HTML, CSS, JavaScript
Libraries & Frameworks: NVIDIA Sionna, TensorFlow, PyTorch, OpenCV, Matplotlib, pandas, Keras
Engineering Tools: MATLAB, Weka, Unity, Jupyter Notebook, VS Code, Android Studio, Makefile, Git

Reviewer Roles

- IEEE Transactions on Mobile Computing (TMC)
- IEEE Global Communications Conference (GLOBECOM 2025)
- The 21st International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob 2025)
- The 18th International Workshop on Selected Topics in Wireless and Mobile Computing (STWiMob 2025)
- The 34th International Conference on Computer Communications and Networks (ICCCN 2025)
- EuCNC & 6G Summit (2025)

Achievements

- Awarded the prestigious Indian Council for Cultural Relations **(ICCR)** scholarship by the Government of India to pursue a B.Tech in Computer Science & Engineering in India.
- Honored with the Islami Bank Merit Scholarship for exceptional performance in the 10th standard board exam.
- Granted a government scholarship by the People's Republic of Bangladesh for achieving above 90% marks in both the 5th and 8th grades.

Positions of Responsibilities

Head (2023-24): Guest Lecture, Vortex: Departmental Annual Technical Symposium, NIT Trichy, Led a dynamic team in curating and orchestrating a highly acclaimed series of guest lectures.

Manager (2022-24): Social Council, Enforced some ideas and social welfare initiatives, playing a pivotal role in fostering a vibrant and inclusive campus environment at NIT Trichy.

Department Coordinator (2023-24) : Sportsfete'23 edition, Handled CSE department during this edition of inter-department sports competition

Treasurer (2023-24): Bengali Association of NIT Trichy, Managed financial planning and expenditure for cultural programs, including the organization of major events such as Bengali New Year celebrations, while ensuring accurate budgeting, transparent accounting, and efficient allocation of resources.