Ashik Abrar Naeem

Adjunct Lecturer, EEE, BUET, Dhaka, Bangladesh

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Education

Bachelor of Science (B.Sc.), Electrical and Electronic Engineering
Bangladesh University of Engineering and Technology (BUET)
January 2022 - June 2026 • CGPA: **3.96/4.00** (**4.00** in last three semester)
Major: Communication and Signal Processing • Rank: **7/204** in Department, **1/65** in Major

Areas of Interest

- Safety-Certified Control for Autonomous & Multi-Agent Systems
- Reinforcement Learning Theory
- Stochastic Control, Optimal Transport & Schrödinger Bridges
- Deep Learning Theory

Research Experience

B.Sc. Thesis - Safe UAV Navigation and Affine Formation Control: Integrating Learning Based Methods with Control Lyapunov and Barrier Functions
Supervisor: Dr. Mohammad Ariful Haque, Professor, Department of Electrical and Electronic Engineering, BUET.

- Designed a decoupled safety filter for zero-shot transfer in reinforcement learning for UAV navigation and established formal inter-agent collision avoidance guarantees for second-order systems in affine formation. Authored two complete manuscripts based on these findings, which are currently under peer review and available as preprints on arXiv [1], [2].

Publications

Conferences:

1. M.A. Mosabbir Antor, **Ashik Abrar Naeem**, Rifat Bin Reza, and Md Mohsinur Rahman Adnan, "Compact Third-Order Bandpass Filter using Hairpin Resonators on Isola Astra MT77 Substrate". *2026 IEEE International Conference on Microwave, Antennas, RF and Sensors (MARSCON)*, Dhaka, Bangladesh, August 2026.

Preprints:

1. **Ashik Abrar Naeem** and Mohammad Ariful Haque, "A Barrier-Modulated Architecture for Safe Affine Formation Control in Second-Order Multi-Agent Systems". *arXiv preprint arXiv:2606.08137*, 2026. [arXiv]

2. **Ashik Abrar Naeem** and Mohammad Ariful Haque, "Zero-Shot, Safe and Time-Efficient UAV Navigation via Potential-Based Reward Shaping, Control Lyapunov and Barrier Functions". *arXiv preprint arXiv:2605.01787*, 2026. [arXiv]

Projects

1. WIUnetX: A Wavelet enabled Inception UNet with Layer-wise Explainable Framework for colorectal Polyp Segmentation.
2. Robust Audio Watermarking based on Frequency-Domain spread spectrum using discrete wavelet transform.
3. BioLock+: An Intelligent Secure Locker with Fingerprint, IoT and OTP-Based Real Time Access Control.
4. Automatic Robotic Lawn Mower.
5. Compact Bandpass Filter using Hairpin Resonators.

Skills

Programming	Python, MATLAB, C, C++
Microcontrollers	STM32, Arduino
Tools	CST Studio Suite, Keil uVision, Simulink, Quartus II, PSAF, Pspice, AutoCAD

Relevant Coursework

- Control System I (B.Sc.)
- Artificial Intelligence and Machine Learning (B.Sc.)
- Random Signals and Processes (B.Sc.)
- Digital Signal Processing I (B.Sc.)
- Continuous Signals and Linear Systems (B.Sc.)
- Probability and Statistics (B.Sc.)
- Introduction to Medical Imaging (B.Sc.)
- Linear Algebra (B.Sc.)
- Engineering Electromagnetics (B.Sc.)
- Electrical Properties of Materials (B.Sc.)
- Solid State Devices (B.Sc.)
- Microwave Engineering (B.Sc.)
- Optical Communications (B.Sc.)
- Communication Systems I & II (B.Sc.)
- Energy Conversion I & II (B.Sc.)
- Wireless Communications (B.Sc.)

Professional Experience

1. **Adjunct Lecturer** Jun 2026 – Present
   Department of Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology (BUET)

Courses Instructed

- Artificial Intelligence and Machine Learning Laboratory
- Digital Signal Processing I Laboratory
- Numerical Technique Laboratory
- Wireless Communication Laboratory
- Communication System I Laboratory

Position of Responsibility

1. **CR, EEE '20 Batch, Section A, BUET** — Level 2, Term 2 and Level 3, Term 1.
2. **CR, EEE '20 Batch, CSP Major, BUET** — Level 4, Term 1 and Level 4, Term 2.
3. **Mess Manager, Titumir Hall, BUET** — Managed dining operations and accounts for

550 residents from February 2025 to June 2025.

Internships/Trainings

1. **Industrial Attachment**, Walton Digi-Tech

Achievements

1. **Dean's List Scholarship**, BUET
2. **University Merit Scholarship**, BUET
3. **University Stipend Scholarship**, BUET

References

1. **Dr. Mohammad Ariful Haque** *B.Sc. Thesis Supervisor*
   Professor, Department of Electrical and Electronic Engineering
   Bangladesh University of Engineering and Technology
   Email: arifulhoque@eee.buet.ac.bd

2. **Dr. A. B. M. Harun-Ur-Rashid** *B.Sc. Advisor*
   Professor, Department of Electrical and Electronic Engineering
   Bangladesh University of Engineering and Technology
   Email: abmhrashid@eee.buet.ac.bd