ANONYMIZED UNDERGRADUATE PROFILE

Electrical & Electronic Engineering Undergraduate

Communication Engineering | Signal Processing | Intelligent Systems

Bangladesh | Personal contact details and identifying information removed

EDUCATION

B.Sc. in Electrical and Electronic Engineering

Public engineering university in Bangladesh | Expected 2028 | Current CGPA: 3.90/4.00

Higher Secondary Certificate (HSC)

Bangladesh | 2023 | GPA: 5.00/5.00 | College rank: 1 | 98% in Physics, Chemistry and Mathematics

Secondary School Certificate (SSC)

Bangladesh | GPA: 5.00/5.00

AWARDS & SCHOLARSHIPS

- University entrance scholarship — Canadian university
- Dean’s International Admission Scholarship — Canadian university
- International Student Award — Canadian university
- Regional Award — Canadian university

RESEARCH EXPERIENCE

Ku-Band 4×4 MIMO Antenna Array: Electromagnetic Simulation and ML-Based Surrogate Modeling

Oct 2026 – Present | Research collaboration with a university faculty member

- Reproducing and simulating a published Ku-band 4×4 MIMO antenna-array design.
- Developing simulation-automation workflows to support electromagnetic analysis and design evaluation.
- Exploring machine-learning-based surrogate modeling to approximate antenna performance and support future design optimization.

Power Electronics and Machine Learning Research

Ongoing | Research collaboration with a PhD researcher

- Contributing to a research project exploring machine-learning methods in a power-electronics application.

RESEARCH & ENGINEERING PROJECTS

GPS-Based Flood Monitoring & Prediction System

MATLAB | Data Analysis | Probabilistic Modeling

- Developed a MATLAB-based flood monitoring and prediction system using precipitation, humidity, soil moisture, and wind-related parameters.
- Integrated environmental data from NASA POWER, including rainfall, soil moisture, and relative humidity.
- Built a probabilistic risk-estimation framework and Markov-chain model for transitions between flood-risk states.
- Designed a MATLAB GUI displaying environmental conditions, flood-risk level, evacuation status, and Dhaka-centered visualization; implemented automated PDF/report generation.

Parkinson’s Disease Detection Using Bangla Speech

MATLAB | Speech Processing | Machine Learning

- Developing a MATLAB-based speech-analysis system for Parkinson’s disease detection using Bangla voice data.
- Performing speech-data preprocessing and feature extraction; exploring machine-learning classification and evaluation using statistical metrics.

Power System Simulation & Analysis

MATLAB/Simulink | PowerWorld | Y-bus

- Performed power-flow analysis using Gauss-Seidel and Newton-Raphson methods and constructed Y-bus matrices.
- Simulated synchronous generators and studied synchronization, parallel operation, load sharing, excitation/governor control, and infinite-bus operation.

Residential Electrical Load Analysis & Design

AutoCAD | Electrical System Design

- Designed and analyzed the electrical distribution system for a four-storey residential building containing 16 units.
- Calculated connected load and maximum demand; applied diversity and power-factor considerations to estimate approximately 100 kVA transformer and 50 kW generator requirements.

Communication Engineering Laboratory

MATLAB | Digital Communication

- Performed experiments involving PAM, TDM, ASK, FSK, DPSK, MSK, GMSK, and OQPSK; studied sampling, quantization, multiplexing, modulation, and demodulation.
- Studied LTE/OFDMA resource allocation, CDMA spreading codes, and T1 digital communication systems.

TECHNICAL SKILLS

Programming & Computing

- MATLAB, MATLAB App Designer, Python, NumPy, Matplotlib, Jupyter, Anaconda

Engineering Software

- MATLAB/Simulink, PowerWorld, PSpice, PSIM, Proteus, AutoCAD

Communication & Signal Processing

- Digital modulation, sampling, quantization, multiplexing, OFDMA, CDMA, random signals, communication systems, speech processing

Electrical Engineering

- Power-flow analysis, Y-bus, synchronous machines, generator synchronization, parallel generator operation, load sharing, electrical load design

Currently Learning

- Machine learning, deep learning, Python-based data analysis

RESEARCH INTERESTS

Communication Engineering • Digital Signal Processing • Wireless & Cellular Communications • AI-Assisted Communication Systems • Speech & Signal Processing • Satellite Communications • Intelligent Sensing Systems • Disaster Monitoring & Prediction

ACADEMIC ACTIVITIES

- Participated in Mathematics and Science Olympiads during school and college.
- Developing the habit of reading and critically analyzing research papers.
- Interested in mathematics and its applications to engineering, signal processing, and emerging AI techniques.
- Interested in interdisciplinary research combining electrical engineering, communications, mathematical modeling, and intelligent systems.

RESEARCH / PREPRINT

“GPS-Based Flood Monitoring & Prediction System: Flood-Aware Dhaka: A MATLAB Implementation,” 2026.

Author names and profile links removed for privacy.

CERTIFICATION

- MATLAB Onramp — MathWorks