

Mostakim Hossain

Uttara, Dhaka

mostakim.rubaiyat@gmail.com | +8801319674564 | [LinkedIn](#) | [Github](#) | [Portfolio](#)

PROFILE SUMMARY

Computer Science and Engineering graduate from North South University with a focus on building intelligent, hardware-integrated systems. From developing deep learning models for Bengali emotion detection to prototyping IoT safety modules and custom embedded devices, I enjoy bridging the gap between software and the physical world. Active researcher and IEEE leader with a strong foundation in full-stack development and a drive for creating pragmatic technical solutions.

EDUCATION

North South University

Fall 2021 - Fall 2025

Bachelor of Computer Science | CGPA; 3.45

Thesis: Emotionally Aware Bangla Speech Systems: Real-Time SER with Adaptive Learning and LLM Integration.

Mastermind English Medium School 06/2019 – 06/2021

Batch of 2021

Higher Secondary (A-Levels)

Ibn Seena English High School 06/2012 – 06/2019

Batch of 2019

Secondary (O-Levels)

RESEARCH & PUBLICATIONS

Emotionally Aware Bangla Speech Systems: Real-Time SER with Adaptive Learning and LLM Integration Mostakim Hossain, et al. | **SN Computer Science (Springer Nature)** | Jan 2026

Developed an efficient CNN-BiLSTM model achieving 82% accuracy across seven Bangla emotions and integrated MFCC features and incremental learning to reduce overfitting in low-resource settings. *GitHub:* [Mostakim52/Realtime-7-Emotion-Bangla-Speech-Recognition](#)

Hybrid CNN Bi-LSTM BSER: An Efficient Tool for LLMs utilizing Incremental Learning Mostakim Hossain, et al. | **IEEE Xplore** | **2025 28th International Conference on Computer and Information Technology (ICCIT)**

Presented research on speech emotion recognition (SER) efficiency for large language model integration at the 28th International Conference on Computer and Information Technology.

Shurokkha Helmet: A Minimalistic and Pragmatic Approach to Ensure Safety on Bangladeshi Construction Sites for Marginal Community Mostakim Hossain, et al. | **SSRN Preprint (Under Peer Review)** | March 2026

Designed a low-cost, IoT-enabled smart helmet prototype featuring real-time detection for falls, hazardous gases, and heat stress. *GitHub:* [Mostakim52/ESP32-Smart-Helmet](#)

PROFESSIONAL EXPERIENCE & GAP ACTIVITIES

Independent Researcher & Developer

January 2026 - Present

- Managing the peer-review cycle for IoT research papers and developing AI driven reputation management tools.
- RepuGate:** Developing a SaaS platform for AI-based review reply systems for Facebook Business. *GitHub:* [Mostakim52/repugate](#)

IEEE NSU Student Branch Women in Engineering Affinity Group – Vice Chair (Technical)

January, 2025 – February, 2026

- Overlooked Graphics Team to suit with deadlines and logistics submissions.
- Supervised Media Team during events.
- Workshop Instructor – “Tiny Powerhouses: LLMs in Microcontrollers”: * Designed and conducted a hands-on technical workshop for student teams, teaching the integration of Large Language Models (LLMs) with ESP32-S3 microcontrollers.
 - Authored comprehensive technical documentation and guided participants through the full stack: hardware assembly, **ESP-IDF v5.5.1** environment setup, and firmware flashing.
 - Troubleshoot real-world hardware-software interface issues, network latency constraints, and deployment errors for multiple teams.

- Created posters, crests and certificates for events.
 - Supervised graphics volunteers.
-

TECHNICAL SKILLS

- **Programming & Development:** Python, Java, JavaScript, C, C++, PHP.
 - **Web Development:** Node.js, React, Django, FastAPI, HTML, CSS.
 - **Frameworks:** React, Next.js, Node.js, FastAPI, Django, Supabase.
 - **Databases & APIs:** MongoDB, MySQL, REST APIs.
 - **AI/ML:** TensorFlow, PyTorch, Scikit-Learn, Computer Vision, Speech & Audio Processing, Pandas, NumPy, Matplotlib, Deep learning for speech/NLP, CNN, Transformer, BiLSTM, RAG for retrieval-augmented QA.
 - **Embedded/IoT:** Microcontroller-based embedded systems (IoT prototyping).
 - **Tools & Collaboration:** GitHub, Postman, Excel, Discord, Trello.
-

PROJECTS

AI & Research Projects

- **Thesis: Emotion Detection from Bengali Voice using Deep Learning** – Developed hybrid CNN-Transformer and CNN-BiLSTM models for Bengali emotion detection. GitHub: [Mostakim52/Realtime-7-Emotion-Bangla-Speech-Recognition](https://github.com/Mostakim52/Realtime-7-Emotion-Bangla-Speech-Recognition)
- **RepuGate (AI SaaS)** – Developing an AI-based review reply system for Facebook Business pages. GitHub: [Mostakim52/reputagate](https://github.com/Mostakim52/reputagate)
- **ESP32-Pocket-LLM** – Voice-controlled pocket LLM on ESP32 that records speech, transcribes with AssemblyAI, and generates stories locally. GitHub: [Mostakim52/ESP32-Pocket-LLM](https://github.com/Mostakim52/ESP32-Pocket-LLM)

Embedded Systems & IoT

- **Shurokkha Helmet (Smart Helmet Module)** – A pragmatic IoT safety module for construction sites with sensor-driven alerts and environmental sensing. GitHub: [Mostakim52/ESP32-Smart-Helmet](https://github.com/Mostakim52/ESP32-Smart-Helmet)
- **Smart ESP32-S3 Macropad** – Custom hardware featuring a WebUI for real-time configuration, F13-F24 mapping, and OLED display support. GitHub: [Mostakim52/esp32-macropad](https://github.com/Mostakim52/esp32-macropad)
- **Electricity Management System** – Monitors consumption per household using Raspberry Pi and automates monthly billing via email. GitHub: [Mostakim52/Java-University-Project---Electricity-Management-System](https://github.com/Mostakim52/Java-University-Project---Electricity-Management-System)
- **ESP8266 NodeMCU Custom Clock** – Wi-Fi synced world clock with MicroPython, featuring an NTP time sync and custom messaging. GitHub: [Mostakim52/ESP8266-NodeMCU-Custom-Clock](https://github.com/Mostakim52/ESP8266-NodeMCU-Custom-Clock)
- **STM32 Keypad Lock** – A 4-digit security system with a servo motor and remote unlock support. Github: [Mostakim52/stm32_Keypad_Lock](https://github.com/Mostakim52/stm32_Keypad_Lock)

Full-Stack & Software Development

- **Khuje Nao (Lost & Found App)** – Flutter-based mobile app for North South University featuring chat, OTP login, and a Flask backend. GitHub: [Mostakim52/khuje-nao](https://github.com/Mostakim52/khuje-nao)
 - **NSU-Bot (Discord)** – A campus information and class reminder bot for students with automated schedule notifications via Supabase. GitHub: [Mostakim52/NSU-Bot](https://github.com/Mostakim52/NSU-Bot)
 - **Smart Freelance Hub** – Junior-design website using machine learning for fair job matching and freelancer exposure. GitHub: [Crysis-Pixel/Smart-Freelance-Hub](https://github.com/Crysis-Pixel/Smart-Freelance-Hub)
 - **Sneaker Store** – PHP and MySQL-based e-commerce site featuring inventory and cart management. GitHub: [Crysis-Pixel/WSneakers](https://github.com/Crysis-Pixel/WSneakers)
-

AWARDS & TECHNICAL TRAINING

Academic Honors & Certifications

- **2nd Place** – Poster Presentation Competition, IEEE NSU PES SBC (April 2024).
- **Quantum Information, Computing & ML Certification** – Mahdy Research Academy (Jan 2024 – June 2024).
- **High Achiever Certificate** – International GCSE, Pearson Edexcel (June 2019).
- **Certificate of Merit (Best Video Editor)** – Students' Movie Festival (2016).
- **Fundamentals of Digital Marketing** – Google Digital Garage (Sept 2020).

AI & Software Engineering Workshops

- **Prompt Engineering:** IEEE NSU SB Workshop on LLM Optimization (2024).
- **Full Stack Web Development:** Workshop on Python & Django, IEEE NSU SB (2024).
- **UI/UX Design:** Crafting User-Centric: A UI/UX Workshop, IEEE NSU SB (2024).

- **Search Engine Optimization (SEO):** Cracking SEO: The Building Blocks of Marketing (2024).

Hardware & Systems Workshops

- **IoT & Embedded Systems:** IOT Workshop 2.0, IEEE NSU SB (2023).
- **PCB Design:** Workshop on Printed Circuit Board Design, IEEE NSU SB (2024).
- **Robotics:** Workshop on Line Follower Robot (LFR), IEEE NSU SB (2024).

Data Science & Professional Skills

- **Data Analytics:** Getting started with Python, NumPy, and Matplotlib, IEEE NSU SB (2023).
 - **Public Speaking:** Speaking with Impact Workshop, IEEE NSU SB (2024).
 - **Graphics Design:** Advanced Graphics Designing Workshop, IEEE NSU SB (2024).
-

SOFT SKILLS

- Languages: English (Fluent), Bangla (Native)
- Team collaboration and cross functional communication in student groups and technical teams.
- Tooling for backend testing and developer workflow using Postman and GitHub.
- Completed over 30+ problems in LeetCode.