Souvik Mandol

Bangladesh University of Engineering and Technology

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Education

Bangladesh University of Engineering and Technology **2022 - Present**
Bachelor of Science in Computer Science and Engineering
Level - 4, Term - 2

Professional Experience

Software Engineer, ***MerilSoft*** *Dec 2025 - Present*

- Developed an AI-driven magazine generation platform – **Magazine Works**
- Implemented file-handling systems on AWS and integrated AI-driven features using Google Vertex AI Studio.
- Currently working on a restaurant system integrating existing online delivery platforms such as Uber Eats and DoorDash, along with a POS solution. - **Restaurant Solution**

Projects

- **Typing Tom: A Typing Learning Game** *Code*
  Tools: C and iGraphics
  - Developed as my first university project using C and iGraphics, Typing Tom is a typing game where random letters appear on the screen, and the player must type the displayed letter to overcome obstacles. If the cat hits an obstacle, the player must type a specific sentence within a time limit to revive it. Failing multiple times ends the game. Words are randomized for variety.

- **Art Gallery Management: A Database Project** *Code*
  Tools: HTML, CSS, React, Javascript, NodeJS, ExpressJS, Oracle
  - Developed using Oracle database, SQL queries, and technologies such as HTML, CSS, React, JavaScript, NodeJS, and ExpressJS, this project manages an art gallery. It includes features for preserving and selling art, as well as a review system for users to rate and comment on artworks. The use of SQL queries ensures efficient management of artwork inventory, transactions, and user interactions.

- **Movie Database : Movie Information Details** *Code*
  ools: Java, JavaFX
  - Developed as a term project using Java and JavaFX, this project serves as a movie database that provides detailed information about movies. It allows users to search, view, and manage movie details through a user-friendly interface built with JavaFX.

- **Side-Channel Attack : Website Fingerprinting** *Code*
  Tools: Python, Flask, PyTorch, Selenium
  - Implemented a cache-based side-channel attack that fingerprints websites by analyzing CPU cache timing patterns collected via a Selenium-automated browser pipeline, then trained two 1D CNN models in PyTorch to classify the target site without intercepting any network traffic.

- **GradPilot** *Code*
  Tools: Next.js, Spring Boot, PostgreSQL Demo
  - GradPilot is an AI-powered platform designed to simplify the graduate school application journey for Bangladeshi students. Our comprehensive solution offers personalized university recommendations, connects you with verified mentors, provides AI-driven Statement of Purpose reviews, scholarship discovery, and features a supportive community forum. Built with modern microservices architecture using Spring Boot and React, GradPilot integrates cutting-edge AI technology including Google Gemini to guide you through every step of your graduate school application process.

- **Collaborator** *Code*
  Tools: Next.js, TypeScript, Supabase, 100ms Website
  - Collaborator is a real-time video calling and meeting platform that enables users to create and join teams, conduct secure video meetings, exchange messages, and share files. The platform supports meeting recording, AI-powered transcription, and automatic meeting summaries to improve collaboration and post-meeting productivity. Built with Next.js and TypeScript, it integrates 100ms for low-latency video conferencing and Supabase for authentication, real-time messaging, file storage, and team management, following a scalable and modern web architecture.

RESEARCH PUBLICATIONS

- **Biological Gait Pattern Analysis with 3D Data Augmentation (Ongoing)**
  Deep Learning, Machine Learning, Medical 3D Data, Matlab
  - Currently working on 3D medical gait data analysis using deep learning and machine learning techniques, including 3D data augmentation methods to enrich limited datasets for improved medical analysis and model performance.

- **Machine Learning–Based Ecological Sustainability Analysis Using ELR (Accepted)**
  Machine Learning
  - Conducted a comprehensive machine learning study to analyze and predict ecological sustainability across 27 EU countries using Ecological Load Ratio (ELR). Implemented supervised classification, supervised regression, and Gaussian-based unsupervised clustering models with metaheuristic feature selection (PSO), achieving over 98 percent classification accuracy and $R^2 > 0.97$ in ELR prediction while identifying population density and forest rents as key driving factors.

TECHNICAL SKILLS

- **Programming Languages:** Python, C, C++, Java, Fortran, Javascript, LaTeX, HTML, SQL
- **Web Development:** React, Laravel, NEXT JS, Node JS, Express JS, CSS, Spring Boot, Azure, AWS
- **Database Systems:** Oracle, Appwrite, PostgreSQL
- **Data Science & Machine Learning:** TensorFlow, PyTorch, Transformers, Scikit-learn, Numpy, Pandas
- **Software:** AutoCAD, Packet Tracer, Apache JMeter, Microsoft Excel PowerPoint
- **Robotics:** Robot Operating System - ROS, Arduino UNO, ATmega32

CERTIFICATIONS

- **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization**
- **Neural Networks and Deep Learning**
- **Structuring Machine Learning Projects**
- **Intermediate Machine Learning**
- **Intro to Machine Learning**
- **Pandas**

ADDITIONAL INFORMATION

Language: English (Fluent)

Interests: Data Science, Automation, Artificial Intelligence and Problem Solving

REFERENCES

1. Dr. Mahmuda Naznin
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2. Dr. Md. Monirul Islam
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