S M Mahidur Rahman

Computer Science Graduate | AI/ML Researcher | mahidursakib.github.io/Portfolio

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EDUCATION

B.Sc. in Computer Science, BRAC University 2022 – 2026

- GPA: 3.13/4.00

Higher Secondary School Certificate (Science), BAF Shaheen College Dhaka 2019 – 2020

- GPA: 5.00/5.00

Secondary School Certificate (Science), Uttara High School & College 2017 – 2018

- GPA: 5.00/5.00

SKILLS

Programming Languages: Python, C, JavaScript

ML/DL Frameworks: PyTorch, TensorFlow, scikit-learn, CNNs, Regression Modeling, Multimodal Learning, Attention Mechanisms, Ensemble Methods, Explainable AI

Computer Vision/Image Processing: U-Net, Attention U-Net, Grad-CAM, SHAP, OpenCV, PIL

Libraries: NumPy, Pandas, Matplotlib

Tools: Git, LaTeX, MongoDB Atlas, Postman, Google Colab, Hugging Face

Web Development: Node.js, React.js, Express.js, MySQL, MongoDB, TailwindCSS, HTML

Soft Skills: Mentoring, Team Collaboration, Problem Solving, Time Management

Language Proficiency: Bangla (Native), English (Professional)

RESEARCH & PROJECTS

Multimodal Deep Learning for Predicting Mechanical Ventilation Duration (Undergraduate Thesis)

- Developed a multimodal predictive system combining chest X-ray images and structured clinical data.
- Implemented CNN-based models (ResNet-18, DenseNet-121) and ensemble learning methods with attention-based fusion.
- Evaluated model performance using regression and correlation metrics with explainability analysis (Grad-CAM, SHAP).

BRAC University Indoor Games Club – Web Management System

- Developed a full-stack web application to manage club members, events, feedback, and payments with secure user and admin workflows.
- Tools & Technologies: PHP, MySQL, HTML, CSS, JavaScript.

Employee Management and Payroll System

- Built a role-based employee and payroll management system with separate admin and employee dashboards and secure backend services.
- Tools & Technologies: MERN Stack (MongoDB, Express.js, React, Node.js), JWT authentication, RESTful APIs.

CampusOrbit – All-in-One Student Engagement System

- Designed and developed a MERN-based student engagement platform to centralize campus events, club activities, and student participation workflows.
- Implemented event interaction features including RSVP management, attendee tracking, automated notifications, and sponsorship request handling for organizers and club officers.
- Tools & Technologies: MERN Stack, RESTful architecture, role-based access control, modular system design.

Non-Deterministic Generative Modeling using β-Variational Autoencoders

- Developed a β-Variational Autoencoder (VAE) for unsupervised data generation, modeling latent uncertainty and comparing stochastic behavior against a deterministic Autoencoder baseline.
- Tools & Technologies: PyTorch, MNIST dataset, CNN-based encoder-decoder architecture, reconstruction MSE, uncertainty visualization using multi-sample outputs and variance analysis.

Enhanced Weather Forecast Classification

- Developed a machine learning–based classification system to predict weather types using structured meteorological data with systematic preprocessing and feature analysis.
- Tools & Technologies: Python, scikit-learn, Pandas, NumPy; trained and compared Logistic Regression, KNN, Decision Tree and Random Forest models.

Attention-Enhanced U-Net for Joint Image Segmentation and Classification

- Developed a deep learning pipeline for joint image segmentation and classification using U-Net and Attention U-Net architectures with an integrated classifier head.
- Tools & Technologies: PyTorch, Attention U-Net, CNNs; evaluated using mIoU, Dice coefficient, pixel accuracy, and classification metrics with qualitative mask visualization.

GuardianBot – Obstacle Avoiding, Rain Detecting, and Light Sensing Robot

- Developed an autonomous Arduino robot that navigates safely by avoiding obstacles, detecting rain to trigger an umbrella mechanism, and halting motion under low-light conditions.
- Tools & Technologies: Arduino Uno, Ultrasonic Sensor, Rain Sensor, LDR, DC motors, Servo motors, L293D motor driver.

CERTIFICATIONS

App Development **2023**

- Completed structured app development training as an extra-curricular activity.