MD MOINUL AZIM

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Education

- **Bangladesh University of Engineering and Technology (BUET)** *2025*
  Bachelor of Science (BSc) in Computer Science and Engineering (CSE)
  Cumulative GPA: **3.42/4.00**

- **St Joseph Higher Secondary School, Dhaka** *2019*
  Higher Secondary School Certificate (A-Level Equivalent)
  GPA: **5.00/5.00**
  Major: Science

- **Noakhali Zilla School, Noakhali** *2017*
  Secondary School Certificate (O-Level Equivalent)
  GPA: **5.00/5.00**
  Major: Science

Research Experience

- **Deep Learning-Based 3D Segmentation and Reconstruction of Femur from QCT Images**
  - Developed a **deep learning-based framework** utilizing **U-Net, Multi-Res U-Net, and Attention U-Net** to segment femur structures from QCT images with high accuracy.
  - Designed an **automated segmentation pipeline** incorporating **preprocessing, and data augmentation** to enhance model performance.
  - Evaluated models based on **DSC, mIoU, sensitivity, specificity, and volumetric accuracy** to assess segmentation effectiveness across different anatomical structures.
  - Implemented **3D reconstruction techniques** using **voxel resampling and polynomial interpolation** to reconstruct segmented femur structures from QCT slices.
  - Analyzed **surface area and volumetric segmentation errors** to identify the most suitable **U-Net variant** for precise bone segmentation in medical imaging applications.

Projects

- **Optimized Machine Learning Models for Heart Disease Risk Prediction**
  This project harnesses ensemble machine learning to enhance heart disease risk prediction, combining models like **Logistic Regression**, **SVM**, **Random Forest**, and **XGBoost**. Through **Hyperparameter Tuning** and **Optimized Stacking**, it aims to achieve high predictive accuracy, with performance validated through F1 score and AUC metrics.
  Project URL: github.com/AzimNahin/Heart-Disease-Prediction

- **Water Potability Prediction Using Comprehensive Ensemble Modeling**
  This project applies ensemble learning for water potability classification, incorporating models such as **Logistic Regression**, **K-Nearest Neighbors**, **Support Vector Machine**, **Decision Tree**, **XGBoost**, **Random Forest**, **AdaBoost**, and **TabNet**. Stacking and averaging techniques are used to optimize prediction accuracy, providing a reliable assessment of water quality based on physicochemical characteristics.
  Project URL: github.com/AzimNahin/Water-Potability-Prediction

- **Time Series Analysis using Forecasting Models to Calculate the Seasonal CCME-Water Quality Index**
  Forecasted various environmental parameters such as pH, EC, TDS, etc., using time series models like **VAR**, **Auto ARIMA**, and **SARIMA** to calculate the **CCME Water Quality Index** for seasonal evaluations (e.g., Pre-monsoon, Monsoon).
  Project URL: github.com/AzimNahin/Time-Series-Prediction

- **Ray Tracing and Illumination Pipeline**
  Implemented a 3D image generation pipeline from scratch involving ray tracing and illumination techniques to create images of various geometric shapes, such as spheres, pyramids, cubes, and 2D planes, using **OpenGL**.

- **File Server**
  This project involves developing a file server using **Socket Programming** in **Java** to enable clients to upload, download, and request files. Clients manage private and public files, and interact through file requests and

messages. The server ensures reliable data transfer using chunked transmission with acknowledgment and error-handling protocols.

- **Venduino: Arduino Based Vending Machine**
  The Venduino project involved creating a vending machine prototype with **Arduino**, featuring sensors, motors, and digital payment for automated, cashless item dispensing. This provided experience in hardware-software integration and automation.
  Demo URL: youtube.com/watch?v=qLc5RY3FT1U

- **Compiler**
  A compiler built from scratch including steps of creating a symbol table, building a lexical analyzer using **Flex**, semantic analyzer using **Bison** and finally generating machine code in x86 assembly.

- **VGDB: Video Game DataBase**
  Developed a video game marketplace featuring user reviews, detailed descriptions, pre-orders, and in-game content purchases. The technology stack includes **PostgreSQL** as the database, **NodeJS** for the backend and **ReactJS** for the frontend.

- **Football Player Database System**
  Developed on the **JavaFX** platform, this system manages a player database with capabilities for searching, adding players, and facilitating club transactions through a marketplace. Utilizing Java's **Networking** and **Multithreading** features, the system supports concurrent user updates.

Skills

- **Programming:** C, C++, Java, SQL, Python
- **Framework & Libraries:** OpenGL, PyTorch, Tensorflow, Sklearn, Pandas, Matplotlib
- **Database:** PostgreSQL, Oracle, MySQL
- **Documentation:** LaTeX
- **Tools & Software:** Cisco Packet Tracer, Bison, Flex, AutoCAD, Tableau, PowerBI

Academic Awards

- **Dean's List Scholarship** *2021, 2022*
  Awarded for achieving a CGPA of 3.75 or higher in an academic year (Consecutive Two Years)
- **Champion** *2019*
  UIU Presents 1st Inter-College Dhaka Zonal Academic Quiz Competition
- **Rank #27, National Round** *2018*
  Bangladesh Science Olympiad
- **General Board Scholarship** *2017*
  Awarded by the Government of Bangladesh for outstanding performance in the SSC Exam.

Standardized Test Scores

- **TOEFL:** *2nd August, 2024*
  Overall: 86   Reading: 21   Listening: 19   Speaking: 26   Writing: 20

Teaching Experience

- **Private Tutor, Freelance** *2019 – Present*
  Tutored students from 9th grade to A-Levels in Physics, Chemistry, and Math, providing guidance for national exams and university admissions.
- **Math Instructor, Radius Coaching Center** *2022 – 2023*
  Taught mathematics for 20-25 hours weekly to classes of 30-40 students from 9th grade to A-Levels. Prepared comprehensive class notes, worksheets, and practice questions to reinforce understanding of key mathematical concepts.

Affiliations

- **Executive Member, Josephite Math Club** *2017 – 2018*
- **Executive Member, Josephite Eco Earth Club** *2017 – 2018*