Abrar Mahmud

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Codeforces | Leetcode | Dhaka, Bangladesh

Education

Bangladesh University of Engineering and Technology (BUET) *Feb 2020 - Feb 2025*
B.Sc. in Computer Science and Engineering: **CGPA: *3.88/4.00***

Rajshahi College, Rajshahi *July 2017 - May 2019*
Higher Secondary Certificate, Science: **GPA: *5.00/5.00***

Skills

- **Programming Languages:** C, C++, Java, Python, JavaScript, HTML, CSS, Assembly, Bash
- **Frameworks and Libraries:** Node.js, Express.js, React, OpenGL, PyTorch, TensorFlow, Pandas, Numpy, Scikit-learn
- **Database:** Oracle, PostgreSQL, MySQL, Prisma ORM
- **Tools:** Git, Github, Swagger, Postman, SSLCommerz, Figma
- **Competitive Programming:**
  - 800+ problems solved in Codeforces
  - 300+ problems solved in Leetcode

Projects

- **ReMan: Retailers and Manufacturers** Retailer | Manufacturer | Backend
  ReMan is a digital platform which connects **retailers and manufacturers** without any interference from third party. The frontend is developed using **React**, **HTML** and **CSS**, with modern UI components like **AntDesign** and **Chakra UI**. I mostly worked on the **backend part** with **Node.js** and **Express.js**, managing database using **PostgreSQL** and **Prisma ORM** and API documentation using **Swagger**.
  - Designed and implemented features for **order management**, **inventory handling**, **voucher application**, and **production house management**.
  - Integrated advanced functionalities, including **batch product management**, **inventory leasing**, **analytics dashboards** and online payment integration using **SSLCommerz**.

- **Educare: Multiple School Management Platform** Frontend | Backend
  EduCare is a system for **management of multiple schools** with role-based functionalities. The project is developed using **React (framework)**, **HTML**, **CSS** for the frontend, **Node.js** and **Express.js** for the backend, and **Oracle DBMS** for the database. I worked on the **backend** part and also **implemented data passing** between the frontend and the backend. It includes the following functionalities:
  - **Admins** can add and manage institutions, **institutions** add teachers and students in their respective classes, manage routines and fees.
  - **Teachers** can view assigned classes and routines, mark attendance, and record exam results, **students** can access marks, attendance, routines, dues, and results.

- **Football Player Management System** Github
  Designed and implemented a **Football Player Management System** in Java with a **GUI using JavaFX and SceneBuilder** with the following features:
  - Built functionalities to search players and clubs based on various criteria (e.g., position, salary range, age).
  - Integrated a real-time **player marketplace** using **Java Networking** with concurrency support, enabling buying and selling of players and synchronizing updates across multiple sessions.

- **DX Ball Game** Github
  Developed a DX-Ball game using the **iGraphics library** in C programming language with the following features:
  - Implemented **core gameplay mechanics**, including paddle and ball controls via keyboard and mouse, **save and reload features**, **perks and damage items**.
  - Added a **menu system**, **music, sound effects**, a **help menu** explaining functionality, and maintained a **high score leaderboard**.

Thesis and Research

- **GNN-LSTM Framework for Temperature Prediction with Enhanced Imputation Methods**
  - Introduced a novel **Graph Neural Network (GNN)** framework for **imputation of missing values** for the dataset.
  - Proposed a hybrid **GNN-LSTM model** that integrates spatial and temporal information for air temperature prediction across **all stations** for both **current and future timestamps**.
  - Consistently outperforming other **baseline models and imputation techniques**.

- **Skin Lesion Classification using Deep Convolutional Neural Network**
  - Utilized a base paper, which employed **ResNet50, DenseNet201, and InceptionV3** with additional layers to classify 7 types of skin lesions, achieving maximum accuracy of **86.91%**.
  - Experimented with various models and additional layers, achieving the best result with **InceptionResNetV2**, with an accuracy of **89.44%**.

Achievements

- Achieved **193rd** place in **SRBD Coding Contest 2024** (Round 1) and advanced to Round 2.
- Secured **3rd** place in **Intra BUET Capture the Flag 2023** as part of Team Noobies.
- Highest ranked as **Expert** in Codeforces, maximum rating 1631.
- Earned **50 Days Badge 2024** in Leetcode for consistent problem solving.
- Earned **two coursera certificates** for completing the following courses: Github Link
  - **Algorithmic Toolbox** by UC San Diego
  - **Data Structures** by UC San Diego

Experience

Remotasks: AI Project Contributor *July 2023 - Jan 2024*

- Initially enrolled in the **Dolphin Coders** project, where I worked on **solving problems** from Codeforces Gym, which included **summarizing** the problem, providing **solution codes** with proper explanations, and creating **test cases**.
- When the project concluded, I was assigned to other AI-related projects, including **prompt generation and evaluation**, **data manipulation and extraction** using Python, **verifying AI-generated answers**, **comparing outputs** from multiple AI models etc.