Mahfuzzaman Sizan

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Education

Bangladesh University of Engineering and Technology (BUET), Dhaka
B.Sc. in Computer Science and Engineering **Graduation:** March 2025
CGPA: 3.03/4.00 Final Year CGPA: 3.27
Scholarships: Government merit scholarships in both SSC and HSC (Rajshahi Board)

Research Interests

Autonomous Vehicles, Fault-Tolerant Systems, Intelligent Transportation Systems, Cyber Physical System, Machine Learning, Artificial Intelligence, Robotics, Deep Learning Applications

Undergraduate Thesis

Fault Tolerance Analysis of Lane-Changing Models for Autonomous Vehicles
Supervised by: *Dr. Tanveer Awal, Department of CSE, BUET*

- Investigated the robustness of two lane-changing models — **MOBIL** and **CLA** — under imperfect sensor information (GPS, radar).
- Conducted extensive MATLAB simulations analyzing impact of sensor errors on safety, traffic flow, merging/waiting time, average trip time and collisions.
- Demonstrated that while none of the models are fully fault-tolerant, CLA exhibits more robust performance with fewer collisions and realistic lane-change behavior.

Research Experience

Undergraduate Researcher, Department of CSE, BUET 2024–2025

- Designed and conducted simulation-based evaluation of autonomous vehicle lane-changing models under sensor noise.
- Collaborated with a 3-member team to analyze traffic efficiency, accident risk, and model resilience in faulty sensor environments.
- Co-authored extended abstract and presented findings in BUET research forum.

Publications

- **Extended Abstract:** "Fault Tolerance Analysis of Lane-Changing Models for Autonomous Vehicles" (with S. I. Sourov, T. Awal) – 2025. (Thesis work)

Technical Skills

- **Programming:** Python (NumPy, Pandas, scikit-learn), C, C++, Java, LaTeX
- **Deep Learning:** PyTorch
- **Database:** MySQL, PostgreSQL, Oracle, MongoDB
- **Tools:** Git, GitHub, MATLAB, Overleaf, Vercel, Render
- **Backend:** RESTful API, FastAPI, Node.js, Express.js, C# (.NET)
- **Frontend:** HTML, CSS, Tailwind, Bootstrap, JavaScript, React

Professional Experience

Junior Software Engineer *June 2025 – Present*
BANBEIS Development Project under the CSE department, BUET

- Developing an OMR (Optical Mark Recognition) Scanning Software using **C# .NET**.
- Contributing to the design and development of core features, including scanning OMR scripts and storing the data in the database. Implemented additional features to improve user convenience, and enhance performance and accuracy of scanning.

Projects

- **TravelBee – Hotel Booking Website**
  GitHub: `View Repository` | **Client (Live Demo):** `travelbeeusernew.vercel.app` | **Server (Live Demo):** `travelbeeadminnewest.vercel.app`
  - Full-stack hotel booking platform built using React, JavaScript, Node.js and MongoDB.
  - Key features: user authentication with JWT, search & filter hotels, booking and cancellation system, admin dashboard, hotel rating & reviews, integrated chatbot, responsive UI.
  - Admins can manage listings, view all users, handle bookings, and monitor feedback through a separate admin panel.
  - Integrated secure RESTful API endpoints with role-based access control and session management.
- **Routine Management System – Class Scheduling Web Application**
  GitHub: `View Repository`
  - Full-stack system developed with the **PERN stack** to manage academic routines.
  - Built RESTful API with CRUD endpoints for class scheduling (create, view, update, delete routines).
  - Admin panel to manage routines through dynamic forms; Student interface with dual view modes: **Grid View** and **Timeline View**.
- **Football Player Database System** (View Project)
  - Desktop app using JavaFX to manage player records.
  - Features: CRUD operations, real-time UI updates.
  - File-based storage with object serialization.
- **Pacman Game (C using iGraphics)** (View Project)
  - 2D maze-based Pacman game with ghost AI and scoring.
  - Implemented levels, keyboard controls, and sound effects.
- **AndroRAT – Android Remote Admin Tool** (View Project)
  - Java-based Android RAT demonstrating ethical hacking concepts.
  - Remote command execution, tested in a sandboxed environment.