



Ekhfa Hossain

 Dhaka, Bangladesh

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 <https://ekhfa.vercel.app/>

Education

BS in Computer Science & Engineering

North South University

Honor: *Magna Cum Laude* (CGPA: 3.72/4.00)

Summer 2017 – Summer 2021

Dhaka, Bangladesh

Work Experience

Software Engineer

Sazim Tech Ltd

October 2023 – Present

Dhaka, Bangladesh

- Led the development of a secure blockchain-based voting application, integrating MetaMask, Next.js, and Ethereum smart contracts to ensure transparent and tamper-resistant voting processes, enhancing election integrity and user trust.
- Crafted a dynamic e-commerce platform leveraging Next.js, TypeScript, Tailwind CSS, and Express.js, with seamless Socket.IO integration for real-time updates.
- Optimized project architectures and implemented scalable solutions, employing modular design principles and efficient coding practices to accommodate future growth

Undergraduate Teaching Assistant

Department of Mathematics and Physics

North South University

August 2021 – January 2022

Dhaka, Bangladesh

- Assisted faculty members with course-related tasks, demonstrating a solid understanding of the subject matter.
- Managed a total of 200 students: Two sections for MAT116 (Pre-Calculus) and Three sections for MAT120 (Calculus-I), each with 40 students.
- Proctored exams and quizzes, evaluated exam papers and quizzes and provided constructive feedback on assignments.
- Collaborated with faculty to enhance the effectiveness of course materials and support the learning objectives.

Research Experience

Undergraduate Directed Research

Department of Electrical and Computer Engineering

North South University

February 2021 – November 2021

Dhaka, Bangladesh

- Performed sentiment analysis using traditional machine-learning techniques on Bangla Facebook posts.
- Created a meticulously annotated dataset of eleven thousand Bangla comments and corresponding reactions, with rigorous quality assurance using dual approach manual and statistical methods for annotation accuracy.
- Conducted insightful demographic analysis to identify patterns in individuals contributing to hate speech and cyberbullying on social media platforms.

Senior Design Project

Department of Electrical and Computer Engineering

North South University

October 2020 – May 2021

Dhaka, Bangladesh

- Developed a real-time traffic offense detection system using YOLOv4 and OpenCV DNN.
- Implemented a multi-stage pipeline for vehicle detection, classification, tracking, and offense detection.
- Combined, pre-processed, and labeled datasets from multiple sources, comprising 11,210 images with 46,662 labeled objects across 17 vehicle categories. An additional dataset of 1,266 labeled images was used for helmet detection.
- Our model can accurately predict six types of traffic offenses. Achieved high accuracy in vehicle detection and classification, with mean average precision rates of 87.19% for YOLOv4 and 98.1% for YOLOv4-tiny in detecting helmets.

Publications

F. H. Shubho, F. Iftekhar, **E. Hossain** and S. Siddique, "*Real-time traffic monitoring and traffic offense detection using YOLOv4 and OpenCV DNN*," TENCON 2021 - 2021 IEEE Region 10 Conference (TENCON), 2021, pp. 46-51
DOI: [10.1109/TENCON54134.2021.9707406](https://doi.org/10.1109/TENCON54134.2021.9707406)

S. A. Kaiser, S. Mandal, A. K. Abid, **E. Hossain**, F. B. Ali, and I. T. Naheen, "*Social Media Opinion Mining Based on Bangla Public Post of Facebook*," 2021 24th International Conference on Computer and Information Technology (ICCIT), 2021, pp. 1-6
DOI: [10.1109/ICCIT54785.2021.9689860](https://doi.org/10.1109/ICCIT54785.2021.9689860)

Skills

Programming Language	C, C++, Python, Java, JavaScript, Solidity
Machine Learning	Google Colab, TensorFlow, Scikit-learn
Web Programming	JavaScript, HTML, CSS, ReactJS, NodeJS, NextJS, NestJS, ExpressJS,
Database	MySQL, PostgreSQL, Firebase, IPFS
Mobile Programming	Android
Version Control System	Git, GitHub
Documentation	LaTeX, Overleaf
Office Suite	Microsoft Word, Excel, PowerPoint

Honors and Awards

❖ Merit-based Scholarship from North South University (50% Tuition Waiver) **2017 – 2021**

Presentations

Real-time traffic monitoring and traffic offense detection using YOLOv4 and OpenCV DNN **2021**
Poster presentation at North South University Capstone Design Project Day 2021

Extracurriculars

NSU Problem Solvers **2018 – 2020**

- Achieved a top 20 rank among 100+ peers, leading to selection for NSUPS Bootcamp training in competitive programming.
- Received training in diverse programming domains, including Number Theory, Binary Search, Dynamic Programming, Data Structure, and Graph Theory.
- Actively participate in weekly programming contests on different online judges, to refine programming skills and problem-solving abilities.

NSU ACM W Student Chapter **2017 – 2020**

- Promoted diversity in tech through workshops and seminars, connecting female students with computing professionals for skill enhancement and networking.
- Conducted free classes in Full Stack Software Development, Machine learning, Blockchain, and Web Security for female students.
- Organized flagship event, "Inter-University Girls' Programming Contest (IUGPC 2019)," drawing participation from 80 teams across the nation and captivating nationwide interest among female contestants.

Others

The Daily Observer – "*Food insecurity in BD*" by Ekhfa H, Adiba A, Ania C, Sumaiya L and Farjana B, April 20, 2018.
Link: <https://www.observerbd.com/details.php?id=133565>