

Nahian Ibn Asad

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Portfolio: <https://nahian-ibn-asad-official.vercel.app>

OBJECTIVE

With a solid foundation spanning 2 years of experience, I specialize in AI-driven development, blending expertise in **Machine Learning, Deep Learning & Computer Vision** with full-stack proficiency to create system-efficient solutions across a broad spectrum of tech environments. I aim to become a promising Computer Engineer, looking forward to accomplishing something phenomenal endowing my expertise.

EDUCATION

BSc. in Computer Science and Engineering

Islamic University of Technology (IUT), Board Bazar, Gazipur, Bangladesh.

- **CGPA – 3.92 (Out of 4)** [Ranked Top 10 in CSE Department] [January, 2019 – May, 2023]

Higher Secondary Certificate (HSC)

Birshreshtha Noor Mohammad Public College, Peelkhana, Dhaka, Bangladesh.

- **GPA – 5.00 (Out of 5)** [June, 2016 – May, 2018]

Secondary School Certificate (SSC)

Birshreshtha Noor Mohammad Public College, Peelkhana, Dhaka, Bangladesh.

- **GPA – 5.00 (Out of 5)** [January, 2014 – February, 2016]

[Received government scholarship for achieving an outstanding result]

TECHNICAL SKILLS

- **Languages:** Python, JavaScript, C, C++, Java, MATLAB
- **Libraries:** PyTorch, TensorFlow, Keras, OpenCV, React.js, NumPy, Alan AI, Selenium, Appium
- **Frameworks:** Python-Flask, Python-FastAPI, Express, Node.js, Next.js, React-Native
- **Platforms & Tools:** Docker, MinIO, Postman
- **Databases:** MySQL, PostgreSQL, Oracle, Redis, MongoDB, Firebase

RESEARCH & DEVELOPMENT EXPERIENCE

Contextual Breach: Assessing the Robustness of Transformer-based QA Models

<https://arxiv.org/pdf/2409.10997>

[May, 2024 – September, 2024]

- A research project featuring a unique dataset incorporating seven types of adversarial noise across five intensity levels.
- Employed robustness metrics to provide a standardized measure for evaluating model performance against various noise types and levels.
- Insights into transformer-based question-answering models, revealing robustness vulnerabilities and performance under realistic textual inputs.

FUSED-Net: Enhancing Few-Shot Traffic Sign Detection with Unfrozen Parameters, Pseudo-Support Sets, Embedding Normalization, and Domain Adaptation

[November, 2023 – September, 2024]

<https://arxiv.org/pdf/2409.14852> (under review, NCAA)

- A few-shot traffic sign detection framework designed to perform effectively with minimal data.
- Enhanced generalization through techniques like unfrozen parameters, pseudo-support sets, embedding normalization, and domain adaptation to operate with limited data.
- Benchmarking the model on the BDTSD dataset reflects a 2.4× mAP gain, surpassing state-of-the-art of the existing FSOD models.

Recognizing Traffic Signs using Fine-tuning Based Few-Shot Object Detection [August, 2022 – May, 2023]

- The thesis topic aims to accurately recognize diverse traffic signs with minimal examples.
- Adapt to variations in traffic sign appearance such as lighting, weather.
- Optimized for real-time performance in autonomous driving systems.

Media File Editor

[June, 2020 - January, 2021]

- FFmpeg (Fast Forward MPEG) used to handle various media formats via command-line interface.
- Java with JavaFX leveraged for building a responsive UI and seamless backend integration.
- Trimming, merging, and enhancing audio and video files made straightforward for users.
- Features include filtering, scaling, and cropping of images for improved media management.
- GitHub link: <https://github.com/Nahian36/Media-File-Editor>

MusiChat

[April, 2021 - October, 2021]

- A media file mobile app using React Native.
- Users can chat with others enjoying the same songs, videos, or PDFs.
- Firebase (NoSQL database), Node and Android Studio are also used.
- GitHub link: <https://github.com/Nahian36/MusiChat>

Expense Tracker

[April, 2021 - October, 2021]

- A React Native app for expense management.
- Offers 16 detailed graphs on expenses, income, and profit with personal data encryption.
- Utilized MySQL, XAMPP, and Node.js for backend, with Android Studio for mobile client integration.
- GitHub link: <https://github.com/Nahian36/Expense-Tracker>

Bangla Math Solver

[November, 2021 - April, 2022]

- A web app to solve simple Bangla handwritten expressions.
- Used Support Vector Classifier (SVC) and Radial Basis Function (RBF).
- Streamlit is used for the interface along with the Google Colab.
- Users can upload images or draw expressions in canvas to get the result.

PROFESSIONAL EXPERIENCE

TigerIT Bangladesh Limited

[June, 2023 - Present]

Software Engineer

- **ANPR (Automatic Number Plate Recognition)** – engineered and optimized the ANPR system for Bangladesh Road Transport Authority (BRTA), restructuring the codebase using FastAPI, adding features and endpoints while managing model training and deployment support.
- **MMC (Make-Model-Color) Recognition** – took charge of developing a framework for vehicle make, model, and color identification, monitoring annotation and training processes in order to ensure accurate results based on visual attributes.
- **VLM (Vision Language Model)** – designed an infrastructure for vision and language understanding in multi-modal tasks such as asking questions or detecting objects using prompts.
- **Py-vision** – led the development of a robust and scalable platform to support microservices like ANPR, MMC, VLM and Motion Detection, with support for file/RTSP inputs, implementing **Object Tracker**, and **Redis-based** communication.
- **iVip (Integrated Video Intelligence Platform)** – formulated a real-time video analytics system for intelligent surveillance by integrating microservices such as ANPR, MMC and VLM using Vision Relay for distributing frames to Py-vision modules.
- **Face Anti-spoofing** – directed team to deploy a solution for the Bangladesh Election Commission, enhancing biometric security to prevent unauthorized access or fraudulent identification.
- **Stable Diffusion** – designed a system for image generation (especially number plates for dataset augmentation) using prompts.
- **Motion Tracking and Person Recognition** – implemented a solution based on live RTSP (Real-Time Streaming Protocol) feeds for monitoring office activity, fine-tuning the person recognition model and deploying a motion tracker.

TigerIT Bangladesh Limited

[October, 2021 – January, 2022]

Intern (ML Dev)

- **Speech Recognition** – contributed to a project involving voice verification from raw audio files.
- **Natural Language Processing (NLP)** – worked on numeric normalization in Text-to-Speech (TTS) systems using Python.
- **Computer Vision** – implemented face filters for TigerIT's application using React JS, enhancing user interaction.

CERTIFICATIONS

- Foundations: Data, Data, Everywhere (Google Data Analytics Professional Certificate), Google (2021)
- Programming for Everybody (Specialization in 5 courses), University of Michigan (2020)
- Mathematics for Machine Learning (Specialization in 3 courses), Imperial College, London (2020)
- Introduction to Structured Query Language (SQL), University of Michigan (2020)
- JavaScript Algorithms and Data Structures, freeCodeCamp (2021)
- Neural Networks and Deep Learning, DeepLearning.AI (2021)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization, DeepLearning.AI (2021)
- Structuring Machine Learning Projects, DeepLearning.AI (2022)
- Convolutional Neural Networks, DeepLearning.AI (2022)

LANGUAGE SKILLS

- English, full professional fluency, with it being my medium of instruction throughout academic career
- Native (Bengali), full professional fluency

EXTRA CURRICULARS

- Volunteer coordinator in ICT FEST, 2019.
- Strong leadership and communication skills exhibited by role taken as the representative of the CSE department and class projects.
- Player of IUT CSE cricket team.
- Member of IUTPS (IUT Photographic Society).
- Served as a child news reporter and performed in advertisements as well as television programs aired on prominent television channels and Bangladesh Betar.