Refat Ahmed

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Education

M.Sc in Computer Science & Engineering (Part-Time) 2025 – Ongoing
Military Institute of Science and Technology (MIST) Dhaka

B.Sc in Electrical & Electronic Engineering — CGPA: 3.38 2020 – 2024
Islamic University of Technology (IUT) Gazipur, Dhaka

Higher Secondary Certificate — GPA: 5.00 2017 – 2019
Notre Dame College Dhaka

Work Experience

Factoryze Oct 2025 – April 2026
Junior ML Engineer

- Worked on an NLP-based chatbot for office text processing in Banglish (Bengali–English mixed language), focusing on intent recognition and contextual response generation
- Built an NLP-driven agentic AI feature using LangGraph and open-source LLMs to automate Google Calendar event creation, cancellation, and rescheduling from Banglish text.
- Worked on fine-tuning BERT-based models for text classification tasks.
- Worked on implementing YOLO-based computer vision pipelines to identify players from football match footage.
- Worked on identifying deadline extraction from Banglish text using a hybrid NLP-based approach.

United International University July 2024 – July 2025
Research Engineer

- Worked on the project **"An Intelligent CVD Risk Profiling for Early Identification of MI and Stroke in Bangladesh."**
- Conducted an exploratory review on global applications of AI and ML techniques for early prediction of cardiovascular diseases (CVD).
- Authored and co-authored 3 peer-reviewed academic research publications.

Projects

Waiter Calling Detection using YOLO Github
Python, YOLOv11, OpenCV, Ultralytics YOLO

- Developed a real-time waiter calling detection system using YOLOv11 to identify hand-raise gestures from video streams for smart restaurant automation
- Built and trained a custom object detection pipeline with dataset preprocessing, train-validation splitting, and video inference using the Ultralytics YOLO framework

FastAPI Based Customer Support Chatbot GitHub
Python, FastAPI, Groq LLM

- Built a modern RESTful chatbot API using FastAPI that generates natural and context-aware responses to customer product queries.
- Integrated a large language model via Groq to interpret user intent and produce detailed answers about products fetched from an external products API. :contentReference
- Designed interactive API documentation with Swagger UI for easy testing and deployment.

Locally Hosted Calendar AI Agent Using Ollama GitHub
Python, Ollama, LangGraph, Google Calendar API

- Developed a local AI-powered calendar assistant that understands natural language event requests and interacts with Google Calendar via API.
- Implemented a two-stage LLM pipeline with local Ollama models to preprocess ambiguous input into structured instructions and call the correct calendar tool actions.
- Supported features for listing events, creating events with natural date parsing, and deleting events through conversational commands.

Knowledge Distillation for Banglish Imperative Sentence Classification Github
Python, Pytorch, Transformers, Scikit-Learn

- Engineered a synthetic Banglish dataset using Google Gemini to train a student model via Knowledge Distillation, optimizing inference speed for low-resource environments

Tech Stack

Programming and Backend: Python, FastAPI, RESTful APIs

Computer Vision and ML/DL: Ultralytics YOLO, OpenCV, PyTorch, TensorFlow, Scikit-Learn, TorchVision, SHAP

LLM and Generative AI: LangChain, LangGraph, Ollama, HuggingFace Transformers

Cloud and MLOps: AWS SageMaker, Git, GitHub

Data Handling and Analysis: NumPy, Pandas, MATLAB, MATLAB Simulink

Database: SQL

Automation and Workflow Tools: N8N

Documentation and Reporting: LaTeX

Online Courses

- Machine Learning in Production — Coursera (by Andrew Ng)
- Large Language Models (LLMs) Concepts — DataCamp
- Understanding Prompt Engineering — DataCamp
- Langgraph Complete Course - Freecodecamp

Competitions

Harvard HSIL Hackathon- Dhaka Hub Winner

- Developed and presented a prototype for AI-based early detection of endometriosis

National Telco Warfare - East West University Finalist

- Advanced to the final round by demonstrating expertise in four stages: Exploratory Data Analysis (EDA), Statistical Analysis, Predictive Modeling, and Deep Learning.

ML- Olympiad, Hyderabad Ranked 25th

- Built and fine-tuned an ARIMA model to forecast India's diverse weather patterns.

Publication

- Zaman, M., Hridhee, R.A., **Bhuiyan, R.A.** et al. Efficacy of using a digital health intervention model using community health workers for primary health services in Bangladesh: a repeated cross-sectional observational study. BMC Public Health 25, 1833 (2025). https://doi.org/10.1186/s12889-025-22770-9