Tanvir Ahammed

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Professional Summary

AI Developer specializing in RAG systems, autonomous agents, and LLM-powered applications. Hands-on experience building production-ready AI solutions using LangChain, PyTorch, and model fine-tuning. Strong algorithmic foundation with 700+ competitive programming problems on Codeforces (1259 rating). Proven ability to translate research into scalable ML systems.

Technical Skills

Generative AI & LLMs: LangChain, LangGraph, Hugging Face Transformers, RAG, ReAct/CodeAct Agents, Agentic AI Systems, Prompt Engineering, LoRA/QLoRA, OpenAI API, Groq API
Machine Learning: PyTorch, Scikit-learn, Model Training & Evaluation, Feature Engineering, Supervised Learning, Embeddings, Fine-tuning Strategies
Data Science & Analytics: Exploratory Data Analysis, Statistical Analysis, Data Preprocessing, Predictive Modeling
Programming Languages: Python, C++, C, Java, JavaScript, SQL
Databases & Vector Stores: FAISS, Vector Databases, MySQL, PostgreSQL, SQLite
Web Frameworks: Streamlit, Django, REST APIs

Experience

AI Developer January 2025 – Present
Sparktech Agency

- Built and optimized production-grade **RAG pipelines** for LLM applications, implementing advanced retrieval strategies, vector search, and context management for high-performance deployments.
- Designed and deployed **agentic AI systems** with LangChain and LangGraph, enabling autonomous tool-calling and multi-step reasoning workflows.
- Fine-tuned **LoRA/QLoRA models** for real-world applications, optimizing inference performance and cost across OpenAI, Anthropic, and open-source LLMs.
- Integrated LLM-powered features into products using **vector databases** (FAISS, Pinecone) and collaborated cross-functionally to deliver scalable semantic search solutions.

Projects

Intelligent Document Search using RAG github.com/tanvir-ahammed/rag-pdf-qa | Live Demo d

- Built a production-grade **RAG**-based PDF Q&A system using **LangChain**, Groq-hosted LLaMA 3.1 inference, and **FAISS**, achieving **sub-2s response times** with **OCR support** via **Tesseract**.
- Implemented a document pipeline with **automatic OCR fallback** (PyPDF + pdf2image), **MiniLM embeddings**, and, deploying a **Streamlit** app with multi-document ingestion, **session management**, and source attribution.

Bengali Empathy LoRA github.com/tanvir-ahammedd/bengali-empathetic-llama-finetuning

- Fine-tuned **LLaMA 3.1-8B** on Bengali empathetic conversations using **LoRA**, implementing gradient checkpointing, mixed-precision training, and a modular **end-to-end fine-tuning system** maintaining full sequence length.
- Built the pipeline with **OOP design patterns**, including dataset preprocessing, attention layer adaptation, automated evaluation, and human assessment, evaluated using perplexity, BLEU, and ROUGE.

Student Performance Prediction & Analysis github.com/tanvir-ahammedd/student-performance-ml-analysis

- Developed ML regression model predicting student math scores with 88% accuracy using **Random Forest** and **Gradient Boosting** on a dataset of 1000 students.
- Performed **EDA**, **feature engineering**, and built a scikit-learn **preprocessing pipeline**, implementing a **modular code structure** with separate pipelines for data ingestion, transformation, training, and prediction.

Thesis & Research

Optimizing Bangla Code Generation (In Progress)

- Developing efficient code generation systems for low-resource languages using **LoRA/QLoRA**, reducing parameters by ∼90% while maintaining comparable performance.
- Implementing and evaluating reasoning-augmented methods **(ReAct/CodeAct)**
- Conducting benchmarking on multilingual code datasets (**500+ samples** from mHumanEval, MBPP), optimizing for efficiency and **cross-language generalization**

ML Fairness in Credit Scoring - Bias Auditing Framework (In Progress)

- Conducting comparative study of machine learning bias across **5+ model architectures** including Logistic Regression, Random Forest, and Gradient Boosting
- Developing open-source toolkit for **automated bias detection** in lending models, enabling compliance with regulatory fairness standards
- Applying **explainable AI** (SHAP, LIME) to identify root causes of discriminatory predictions, analyzing **10+ fairness metrics** across protected attributes

Achievements

Codeforces Rating: **1259** | **700+** Problems Solved — **codeforces.com/profile/tanviiir**
3rd Runner-Up: Inter-department Programming Contest, GUB CSE Carnival *(2024)*
2nd Place: Intra-university Programming Contest *(2024)*

Training & Certifications

AI / Machine Learning Course – Phitron *(Ongoing)*
5-Day In-Person AI/ML/IoT Bootcamp – Bondstein *(2025)*
Competitive Programming Course – CPS Academy *(2024)*
CSE Fundamentals – Phitron *(2022)*

Education

B.Sc. in Computer Science and Engineering *(Expected June 2026)*
Green University of Bangladesh

- CGPA: 3.58/4.00 (1 Semester remaining)

Higher Secondary Certificate (Science) *2019*
Chowgacha Government College

- GPA: 5.00/5.00