Abdullah Al Muhit

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PROFESSIONAL SUMMARY

Backend Software Engineer and Machine Learning Engineer with hands-on experience building production AI systems, scalable REST APIs, and data pipelines. Proficient in Python, FastAPI, Django, PostgreSQL, and LLM integration. Experienced in deploying ML-backed features, designing microservice architectures, and optimizing system performance. Seeking to contribute to AI agent infrastructure, enterprise automation platforms, or full-stack engineering teams.

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, SQL, HTML/CSS

Backend & APIs: FastAPI, Django REST Framework, Flask, REST APIs, Microservices, JWT Authentication, Alembic, Celery, Redis

Databases: PostgreSQL, Supabase, SQLite, Database Design, Query Optimization, Data Modeling

Machine Learning: Supervised/Unsupervised Learning, Feature Engineering, Model Evaluation, Computer Vision, Fine-tuning, QLoRA, LoRA, Multi-GPU Training, PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy

NLP & LLMs: Large Language Models (LLMs), Natural Language Processing (NLP), Text Preprocessing, Embeddings, Transformers, Prompt Engineering, LLM Integration, Hugging Face, Vision-Language Models, Temporal Reasoning, Explainability

Cloud & DevOps: AWS (EC2, S3), Docker, Docker Compose, Git, Linux, CI/CD, Server-Sent Events (SSE), RunPod, Vercel

Data Engineering: ETL Pipelines, Data Modeling, Database Design, Data Visualization

EDUCATION

Master of Engineering in Computer Science *Expected May 2026*

Virginia Tech Arlington, VA

- GPA: 3.61/4.0
- Relevant Coursework: Machine Learning, Deep Learning, Natural Language Processing, Cloud Computing, Software Engineering

Bachelor of Science in Computer Science and Engineering *2018 - 2023*

BRAC University Dhaka, Bangladesh

- GPA: 3.18/4.0

PROFESSIONAL EXPERIENCE

AI/ML Engineer Intern *Sep 2023 - Oct 2023*

Inflexion Point Technologies Dhaka, Bangladesh

- Built production machine learning pipeline using Python and Scikit-learn to optimize ad targeting system, improving precision by 15% and recall by 12% across 50,000+ daily ad impressions
- Developed automated preprocessing pipeline reducing model training time by 20% through parallel processing, feature caching, and batch optimization
- Integrated ML model predictions into production dashboard via Flask REST API, enabling real-time ad targeting for marketing team
- Collaborated with backend engineers to deploy models to staging and production environments, implementing error handling, logging, and performance monitoring

PROJECTS

MedGemma Clinical Suite - Production Medical AI Platform github.com/muhit009/MS-MedGemmaTI | https://ms-med-gemma-ti.vercel.app/ *Jan 2026*

FastAPI, Supabase, QLoRA, PostgreSQL, Next.js, Hugging Face

- Published MedGemma-TI on Hugging Face, a QLoRA-fine-tuned temporal progression model achieving 44% accuracy (20.3pp improvement over base MedGemma-4B-IT) and 54.8% worsening recall on 17,802 held-out chest X-ray temporal pairs from CheXpert and RICORD datasets
- Designed novel temporal coherence evaluation (flip test) demonstrating 26.4% genuine visual reasoning (19.7× improvement over base model), proving the model understands temporal image sequences rather than exploiting text patterns
- Engineered complete FastAPI backend with 15+ REST endpoints, real-time AI streaming via Server-Sent Events (SSE), JWT authentication, and Supabase/PostgreSQL schema with SHA-256 image deduplication
- Built full training pipeline on Virginia Tech ARC multi-GPU cluster: curated 57,283 temporal pairs with patient-level splits preventing leakage, implemented 1.61× upsampling for class imbalance, trained QLoRA adapter (r=16, α=16) achieving 2.45× macro F1 improvement
- Architected production system with flexible inference modes (RunPod serverless/local GPU/mock), complete clinical workflow (patient management, vitals, temporal imaging), and audit trail for healthcare compliance

Intelligent Log Analyzer and Incident Assistant github.com/muhit009/Intelligent-log-analyzer-Incident-Assistant *Dec 2025*

FastAPI, PostgreSQL, Docker, Alembic, LLM APIs, Redis, Microservices

- Architected production-grade backend system for AI-powered log analysis handling 10,000+ log entries per day with FastAPI REST API (12 endpoints) and PostgreSQL database
- Built real-time log ingestion pipeline parsing heterogeneous formats (JSON, syslog, custom) with 99.5% parsing accuracy and automatic schema detection
- Developed modular microservice architecture supporting ML-based anomaly detection, incident correlation, and LLM-powered root cause analysis using prompt engineering
- Implemented 8-table PostgreSQL schema (logs, incidents, patterns, alerts) managed via Alembic migrations with full version control for zero-downtime updates
- Containerized services with Docker Compose and integrated Redis caching layer reducing query latency by 60% for frequently accessed log patterns

Generator-Guided Deepfake Speech Detection github.com/muhit009/Generator-Guided-Synthetic-Speech-for-Robust-Deepfake-Detection *Sep 2025*

Python, PyTorch, RawNet2, ASVspoof Datasets, Deep Learning

- Implemented RawNet2-based deep learning system for deepfake speech detection achieving 94% accuracy on ASVspoof 2019 dataset with 100,000+ audio samples and cross-dataset generalization testing
- Performed inference and error analysis across 15+ synthetic speech generators to study model robustness and cross-generator consistency
- Developed explainability pipeline using LLM-based reasoning to generate interpretable explanations for 1,000+ spoof classification decisions
- Built end-to-end experimentation framework in PyTorch including data preprocessing, model evaluation, result analysis, and automated reporting

TajahatEcom - E-Commerce Backend Platform github.com/muhit009/TajahatEcom *2023*

Django REST Framework, PostgreSQL, Celery, Redis, Chart.js

- Engineered scalable REST API backend supporting product catalog management, order processing, and inventory management for fresh produce marketplace using Django REST Framework
- Designed PostgreSQL database schema with 10 normalized tables handling products, orders, users, payments, and delivery tracking
- Implemented asynchronous task queue using Celery for order processing and email notifications, improving checkout flow efficiency by 35%
- Built admin dashboard with real-time inventory analytics and low-stock alerts using Django templating and Chart.js data visualization

LEADERSHIP AND ACTIVITIES

- **General Secretary, BRAC University Soccer Club** | Organized events and managed team operations for 50+ members
- **Captain, High School Soccer Team (2 years)** | Runner-up in BRAC University Chess and Soccer Tournaments