Mehedi Hasan

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Summary

Junior Software Engineer specializing in Backend Development and Applied AI/ML. Skilled in building scalable backend systems, automation tools, and data-driven pipelines. Skilled at designing modular systems and collaborating in global, fast-paced teams with a exposure to enterprise-grade architectures and workflows. Core contributor to **Maveric Platform v1.0** under **CloudlyIO**, delivering scalable data services for telecommunications infrastructure. Recognized for adaptability, clarity in documentation, and reliable delivery under pressure. Passionate about backend architecture, clean design, and transitioning into a full-time Backend role.

Experience

Software Developer Intern *CloudlyIO* Jun 2025 Present
*Project: Maveric - a developer platform for simulating and optimizing cellular networks using AI/ML, originating from the **LF Connectivity** open-source ecosystem and commercially developed by **CloudlyIO** in partnership with **NVIDIA**.*

- Contributed to three of five core modules in **Maveric v1.0**, including backend utilities, API integration, and modular in-memory data generation services improving pipeline efficiency by **40%** and maintainability.
- Integrated data generation modules into production with validated parameter loaders for time-series and spatial data; designed APIs and experimented with Kafka-based distributed messaging.
- Implemented a **DELETE Endpoint for BDT Models**, ensuring full cleanup across S3, local storage, and database layers.
  Tech Highlights: FastAPI, PostgreSQL, S3 wrapper, error handling, RESTful design validated via Postman.
- Working on **Redis & Mongo Integration** for inference caching and JSON result persistence improving model reusability and reducing redundant computation.
  Design: multi-tier L1 (Redis) + L2 (Mongo) inference cache, key-hash indexing by tenant/dataset, async service integration.
- Developed an **MCP server agent** (FastAPI + PostgreSQL) for automated configuration, network monitoring, and RAG-powered analytics.
- Collaborated with global teams (USA, India, Bangladesh) under tight deadlines, ensuring production-ready delivery using Git (submodules), Docker orchestration, AWS S3, and Agile workflows.

Projects

HR Automation Agent (POC) *Management Automation & Conversational assistant for HR operations*
FastAPI, Next.js, PostgreSQL, Pandas, Alembic

- Built a conversational AI agent with UUID-based multi-database architecture (Fingerprint, HR Portal, Master DB) ensuring data consistency.
- Built automation pipelines (attendance reconciliation, leave tracking, HR insights) and delivered CSV export, real-time dashboards, and LLM-powered natural languagetoSQL translation.
- Achieved 100% passing test coverage with `pytest`, ensuring reliability across API, business logic, and sync workflows.

Maveric MCP Mini *Real-time telco network Tower monitoring with AI insights*
Python, MongoDB, FastMCP, Groq LLM

- Built a real-time network tower monitoring system using the Model Context Protocol (MCP) for intelligent log ingestion and tool-based AI analysis.
- Designed scalable time-series storage in MongoDB with automatic indexing and high-frequency batch writes.
- Integrated Groq LLM and developed analytics dashboard for natural language summaries and anomaly tracking, performance metrics tracking, enabling AI-driven operational insights & performance metrics for reporting.

AI Chat Log Summarizer *Summarization tool for large chat logs*
Python, NLTK, scikit-learn, Hugging Face

- Developed a CLI tool to parse, analyze, and summarize large chat logs using extractive (TF-IDF) and abstractive (transformer) methods.
- Added automatic chunking to handle input size beyond model limits.

Tesla Stock Return Forecasting *ML pipeline for predicting 21-day stock returns*
Python, pandas, scikit-learn, TensorFlow, XGBoost

- Built a full ML pipeline: ingestion, advanced feature engineering, EDA, and walk-forward CV.
- Designed a stacking ensemble capturing linear and non-linear patterns for robust directional predictions.

Skills

Languages & Frameworks: Python, FastAPI, SQL, REST APIs, GraphQL, JavaScript, Node.js, Typescript
Data & ML: Agentic workflows, Hugging Face, LLM, pandas, NumPy, scikit-learn, TensorFlow, PyTorch
Infrastructure & Databases: PostgreSQL, MySQL, MongoDB, AWS S3, Docker, CI/CD, Kafka (familiar)
Practices & Tools: Git/GitLab, Linux, Pytest, Alembic
Soft skills: Collaboration, communication, documentation, fast learning, problem solving

Education

Bachelor of Science in Computer Science *Brac University, Dhaka (2024)*
GPA: 3.63/4.00

Research

CASD-Net with NeuroSeg4D: A Deep Learning Framework for ASD Detection *Python, TensorFlow, ABIDE I Dataset*

- Developed **NeuroSeg4D** pipeline for 4D fMRI processing: spatial calibration, dynamic windowing, and cache optimization to maintain spatiotemporal data integrity
- Designed **CASD-Net** (3D CNN with SE blocks) achieving **94% precision** on ABIDE I dataset
- Implemented Nilearn-based visualization of functional connectivity for model interpretability

Certifications

- Machine Learning Specialization DeepLearning.AI & Stanford Online
- Supervised Machine Learning DeepLearning.AI
- Cleaning Data in Python DataCamp
- Feature Engineering for ML DataCamp
- TreeBased Models in Python DataCamp

Achievements & Extracurricular

- District Champion, iGen Hackathon (Prothom Alo & Grameenphone)
- Patriot CTF 2024 Top 30% (393/1361) & Phoenix Summit CTF 20^{th}/127. Certificate: Patriot, Phoenix
- 500+ problems solved in competitive programming; CS Tutor at Brain Skill, mentored 100+ students