Shahzaib Mahar

AI/ML Engineer | Backend & Full-Stack Developer

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PROFESSIONAL SUMMARY

AI/ML and software engineer focused on building intelligent applications and reliable backend services. Experienced with retrieval-augmented generation (RAG), large language model (LLM) workflows, semantic search, vector databases, NLP, and Python-based APIs. Project work spans developer tooling, ML data-drift monitoring, personal-finance analytics, semantic recommendations, and Java desktop systems. Completed a Machine Learning Engineer internship at FlyRank in October 2026.

EXPERIENCE

Machine Learning Engineer Intern

July 2025 - October 2026

FlyRank

- Built and worked on machine-learning pipelines supporting AI-driven content ranking and search-engine optimisation workflows, using Python and FastAPI.
- Applied natural language processing, vector search, and microservices principles to develop scalable backend services for model inference.

TECHNICAL SKILLS

Programming: Python, Java, C++, SQL
AI / Machine Learning: RAG, LLM orchestration, NLP, Hugging Face Transformers, SentenceTransformers, FAISS, scikit-learn, Prophet, Isolation Forest, AST parsing, vector embeddings, data-drift monitoring
Backend & APIs: FastAPI, Uvicorn, REST APIs, microservices, Docker, asynchronous programming
Databases: PostgreSQL, MySQL, SQLite, MongoDB
Data & Developer Tools: Pandas, NumPy, Plotly, Streamlit, Typer, Rich, JDBC, Git, GitHub
Computer Science: Object-oriented programming, data structures and algorithms, system design, layered architecture

SELECTED PROJECTS

DriftWatch - ML Data Quality & Drift Monitoring github.com/smaharx/driftwatch

Tech: Python, FastAPI, React, TypeScript, PostgreSQL, SQLAlchemy, NumPy, SciPy, Pytest

- Developed an open-source platform to monitor production ML data quality and detect distribution drift against saved training baselines.
- Implemented statistical drift detectors including Population Stability Index (PSI), Kolmogorov-Smirnov, Chi-squared, and Jensen-Shannon divergence.
- Built a REST API, persistent run history, feature-level alerts, Slack notifications, a React dashboard, and a Python SDK; included automated tests.

Nobody Copilot v1.1.0 github.com/smaharx/Nobody

Tech: Python, FastAPI, FAISS, SentenceTransformers, RAG, AST, SQLite

- Designed a local AI engineering copilot with a decoupled CLI, FastAPI service, FAISS vector store, and SQLite-based session memory.
- Created AST-based source parsing that indexes complete functions, classes, and methods instead of arbitrary text chunks, preserving code structure for retrieval.
- Built a RAG pipeline with 384-dimensional SentenceTransformer embeddings, FAISS similarity search, and a re-ranking stage to improve contextual relevance.
- Added session-aware memory and fallback handling for API downtime.

Finova - AI-Powered Personal Finance Tracker github.com/smaharx/Finova

Tech: Python, FastAPI, Streamlit, scikit-learn, Prophet, Pandas, Plotly, Docker, SQLite

- Built a finance-tracking application with an interactive dashboard, spending analysis, and a Python API/backend structure.
- Implemented NLP-assisted transaction categorisation with a user correction workflow, Isolation Forest anomaly detection, and Prophet-based 30-day budget forecasting.
- Created a synthetic-data seeder for 20,000 realistic transactions to exercise forecasting and anomaly-detection workflows.

Cinema-Sense - Semantic Movie Recommendation Engine v2.0.0 github.com/smaharx/cinema-sense

Tech: Python, Hugging Face Transformers, all-MiniLM-L6-v2, FAISS, Streamlit, TMDb API

- Built a semantic movie-search engine using transformer embeddings across 5,000+ movie records to support meaning-based discovery beyond keyword matching.
- Combined FAISS nearest-neighbour retrieval with over-fetching and deterministic Pandas filtering to reduce empty results on strict queries.
- Used parallel thread-pooling for TMDb poster requests and cached the vector index in memory for repeat searches.

Disaster Management System github.com/smaharx/disaster-management-system

Tech: Java, Java Swing, MySQL, JDBC

- Developed a desktop application for disaster-relief operations, including family registration, inventory tracking, restocking, and operational reports.
- Organised the application into UI, business logic, JDBC data-access, and MySQL layers; used parameterised queries to guard against SQL injection.

EDUCATION

Bachelor of Science in Computer Science
Sukkur IBA University, Sukkur, Pakistan | CGPA: 3.02 / 4.00

2024 - Expected 2028

Additional Information

Languages: Urdu (Native), English (Professional Working Proficiency)
Technical interests: AI developer tools, vector search systems, production LLM applications, backend architecture
Open source: Public projects and source code: github.com/smaharx