Haben Eyasu Akelom

Senior Software & Machine Learning Engineer | FinTech & AI/ML

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Professional Summary

Senior Software & Machine Learning Engineer skilled in developing both **scalable financial platforms** and **intelligent AI/ML solutions**. Combines proven expertise in **high-volume Java/Spring Boot microservices** with hands-on experience building **end-to-end credit scoring, fraud detection, and financial complaint analysis systems** using **MLOps best practices**. Applies **predictive modeling, NLP, semantic search, and data analytics** to deliver **actionable insights and measurable business impact**.

Skills

Languages
- Java 8+, Python (Data Science Stack), JavaScript, SQL

Databases
- PostgreSQL, MySQL, MongoDB, Redis

Architecture
- Microservices, REST APIs, SOAP APIs, Event-driven design

Monitoring
- ELK Stack, Prometheus, Grafana

Communication
- Stakeholder Communication, Technical Documentation, Presentation Skills

Problem-Solving
- Analytical Thinking, System Design, Performance Optimization

Machine Learning & AI
MLOps, Machine Learning (scikit-learn, XGBoost), NLP / LLMs, Predictive Modeling, Statistical Analysis / A/B Testing

Frameworks
- Spring Boot, Spring Security, Spring Cloud, **FastAPI**

MLOps & DevOps
- Docker, Jenkins, GitLab CI/CD, MLflow, DVC (Data Version Control), Containerized Model Serving

Security
- OAuth2, JWT, RBAC, AES-256 encryption

Leadership & Collaboration
- Team Leadership, Technical Mentoring, Cross-functional Collaboration

Problem-Solving

Project Management
- Agile Methodologies, CI/CD Implementation, Project Planning

Work Experience

AI/ML Engineering Portfolio (10 Academy KAIM Program), Project-Based Training · 11/2025 – 11/2025 | Addis Ababa, Ethiopia

- **MLOps & Production AI Engineering:** Architected and deployed **end-to-end machine learning systems** for critical financial functions, including a **containerized credit scoring API** and a **fraud detection model** with **SHAP-based explainability**, implementing **full CI/CD pipelines, version control, and production monitoring**.
- **Advanced Data Science & NLP:** Developed and validated **predictive models across multiple domains**, including **sentiment-driven stock prediction using NLP**, **insurance risk analytics with statistical hypothesis testing**, and a **financial complaints RAG chatbot** leveraging **semantic search and LLMs**.
- **Data Pipeline & Analytics Leadership:** Engineered a **solar data analysis system processing 10M+ measurements**, built **automated EDA pipelines reducing analysis time by 60%**, and delivered an **interactive Streamlit dashboard** for **real-time solar potential ranking and operational decision support**.

Senior Software Engineer, Kacha Digital Financial Service S.C · 12/2023 – Present | Addis Ababa, Ethiopia

- **Architected and led development of a core Credit Scoring API**, a production FastAPI microservice automating financial risk assessment. Engineered a hybrid system orchestrating rule-based logic and machine learning models, deployed with containerized APIs for scalability.
- **Built an enterprise USSD platform** serving 27+ financial institutions, processing 8M+ transactions monthly with high availability.
- **Architected multi-tenant microservices** with OAuth2/JWT supporting 4 languages and thousands of concurrent sessions.
- **Engineered robust data pipelines and system integrations** for the scoring service, handling secure data ingestion and validation to enable real-time decisioning within the financial ecosystem.
- **Optimized performance** across systems, reducing critical API response times by 60% through Redis caching and connection pooling.
- **Implemented comprehensive security frameworks,** including PIN validation, API key management, encrypted communications, and audit trails for compliance.
- **Architected and delivered an end-to-end data pipeline** for KYC and transaction processing, featuring secure ETL workflows and scalable user management.

Full-Stack Engineer, AELAF Engineering
02/2022 – 12/2023 | Addis Ababa, Ethiopia

- Architected payment platform supporting 5 telecom providers with real-time ledger tracking
- Developed secure REST/SOAP APIs with JWT authentication and role-based access control
- Built React-based enterprise dashboard with comprehensive monitoring and reporting capabilities
- Optimized MySQL database architecture reducing system latency for high-volume transactions

Software Engineer-IV, AELAF Engineering
12/2020 – 01/2022 | Addis Ababa, Ethiopia

- Designed bulk voucher upload system supporting 10,000+ daily telecom voucher issuances
- Automated reporting processes using PostgreSQL materialized views and scheduled jobs
- Integrated CI/CD pipelines with Jenkins and implemented Kafka-based event-driven features

Software Engineer | Defense University College of Engineering | 2018-2019

- Designed and developed a full-stack **clinic management system** to digitize patient records and appointment scheduling, improving administrative efficiency.
- Engineered the backend using **Java** and **Spring Boot** with a **MySQL** database, creating secure RESTful APIs for data management.
- Built a responsive frontend interface using **JavaScript** and **React**, enhancing user experience for medical staff and patients.

Software Developer | Defense University College of Engineering | 2017-2018

- Contributed to the development of a university **registrar system** to manage student enrollment, courses, and grades, serving thousands of users.
- Implemented key features using **Java** and **Spring MVC**, focusing on robust data validation and transaction integrity with **PostgreSQL**.
- Assisted in debugging, testing, and deploying the system, gaining foundational experience in the software development lifecycle.

Projects

Lead Architect & Developer | Enterprise MaaS Platform (Personal Project)

- Designed and developed a **high-volume, multi-tenant SaaS platform** for bulk SMS communication using **Spring Boot 3 and Java 17**, simulating enterprise-scale operations.
- Architected a **hybrid multi-tenancy model** with row, schema, and database-level isolation, enabling **secure data separation**.
- Built core platform infrastructure, including **API gateway with JWT & API Key authentication**, configurable **rate-limiting**, and an **event-driven billing engine**.
- Developed **integrations with multiple telecom providers**, including **intelligent routing, failover logic**, and **real-time delivery tracking**, demonstrating **99%+ service reliability in simulation**.

E-commerce Micro-service Platform (Personal Project)

- Architected 4 core microservices using Spring Boot 3.2.7 and Domain-Driven Design
- Implemented service discovery with Spring Cloud Eureka and reactive programming (WebFlux)
- Dockerized services with multi-stage builds and custom Docker networks

Real-Time Log File Processing Microservice (Personal Project)

- Built Next.js + Node.js microservice processing 1GB+ log files in <5 minutes
- Created React dashboard with WebSocket integration providing <50ms latency updates
- Implemented RESTful API with Supabase integration and JWT authentication

Personal Finance Tracker API | FastAPI, PostgreSQL, Docker, CI/CD, FastAPI, PostgreSQL

- Developed production-grade RESTful API using FastAPI and PostgreSQL with JWT authentication and multi-currency support
- Implemented secure authentication with OAuth2 password flow, Argon2 password hashing, and JWT token management
- Built scalable database architecture using SQLAlchemy 2.0 ORM with async operations and Alembic migrations
- Established CI/CD pipeline with Jenkins automation, Docker containerization, and Kubernetes deployment
- Designed comprehensive API documentation with Pydantic schema validation and 90% test coverage

Education

**Defense University, College of Engineering,
M.Tech. in Computer Engineering**
09/2019 – 12/2021 | Bishoftu, Ethiopia

**Mekelle University,
B.Sc. in Information Technology (Engineering)**
09/2011 – 07/2016 | Mekelle, Ethiopia