ABIKALE MICHAEL RAYMOND

AI Systems Engineer | Full-Stack AI Engineer | Agentic AI Engineer

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PROFESSIONAL SUMMARY

AI Systems Engineer and Full-Stack AI Engineer with over five years of experience spanning software engineering, data engineering, analytics and AI application development. Specialised in building intelligent software systems that integrate large language models, AI agents, backend services, data infrastructure and user-facing applications. Experienced in Python, TypeScript, FastAPI, Next.js, NestJS, LangGraph, LangChain, PostgreSQL, Redis, Kafka and Docker, with a strong understanding of agent orchestration, tool calling, retrieval-augmented generation (RAG), vector search, multi-agent workflows and human-in-the-loop systems.

Knowledgeable in AWS (EC2, S3, IAM, RDS, VPC, ECS, ECR, Fargate, CloudWatch), including container deployment, managed databases, security and monitoring. Combines full-stack engineering, applied AI, distributed systems and cloud infrastructure to build intelligent applications, autonomous agent platforms and scalable AI-powered products.

TECHNICAL SKILLS

AI Systems & Agentic AI: LLM integration, LangGraph, LangChain, agent orchestration, multi-agent systems, tool calling, function calling, task planning, conversation memory, human-in-the-loop workflows

LLM Applications & Retrieval: RAG, embeddings, vector search, pgvector, semantic search, retrieval pipelines, prompt engineering, guardrails and fallback mechanisms

Backend & Distributed Systems: Python, FastAPI, TypeScript, NestJS, REST APIs, WebSockets, asynchronous processing, event-driven architecture, microservices, background workers

Frontend: Next.js, React, TypeScript, JavaScript, Tailwind CSS, real-time user interfaces, frontend-backend integration

Databases & Messaging: PostgreSQL, pgvector, Redis, Kafka, MinIO, relational database design, caching, data modelling, event streaming

Machine Learning: scikit-learn, XGBoost, LightGBM, PyTorch, GraphSAGE, YOLOv8, OpenCV, anomaly detection, classification, model inference

AWS Cloud: EC2, S3, IAM, VPC, RDS, ECS, ECR, Fargate, CloudWatch, IoT Core, container deployment architecture, networking and monitoring

DevOps & MLOps: Docker, Git, GitHub Actions, CI/CD, MLflow, Prometheus, Grafana, automated testing, application monitoring

PROFESSIONAL EXPERIENCE

AI Systems Engineer | Intelligent Automation & Systems Integration — **August 2023 to Present**

Globacom, Lagos, Nigeria

- Engineer Python and SQL workflows for automated data processing, analysis and operational intelligence across large-scale datasets.
- Develop automated validation, anomaly detection and reconciliation workflows to identify inconsistencies across millions of records.
- Built data-driven automation workflows for incentive validation, processing and reporting, improving operational efficiency.
- Investigate system and data-processing failures, identify root causes and improve data integrity, workflow reliability and performance.

Data Engineer | Data Systems & Backend Integration — **September 2021 to July 2023**

Globacom, Lagos, Nigeria

- Engineered SQL-based processing and transformation workflows supporting large-scale mediation and Management Information Systems (MIS).
- Developed and maintained ETL pipelines for extraction, transformation, validation and preparation of data for downstream analytics.
- Built automated aggregation and reporting workflows to support operational intelligence and business decision-making.
- Investigated data-processing discrepancies, optimised query logic and improved data integrity, consistency and reliability.

AI SYSTEMS ENGINEERING & PRODUCT DEVELOPMENT

Founder & Lead AI Systems Engineer — **May 2026 to Present**

TheBigFish Lab

- Architect and develop AI-enabled software products, autonomous agent applications and full-stack platforms.
- Design and integrate LLMs, agent orchestration frameworks, retrieval systems, backend APIs, databases and frontend applications.
- Build intelligent workflows with tool execution, contextual data retrieval, multi-step task processing, human approval and failure handling.
- Develop reusable backend services and infrastructure patterns for AI-powered products; explore AWS deployment architectures for hosting, orchestration, storage and monitoring.

SELECTED AI SYSTEMS & SOFTWARE PROJECTS

1. FIN | *Autonomous AI Agent Platform*

Tech: Python, FastAPI, LangGraph, LangChain, PostgreSQL, pgvector, Redis, Kafka, Next.js, TypeScript, Docker, AWS ECS/Fargate, ECR, RDS, S3, ElastiCache, CloudWatch, IAM

- Designed an autonomous agent architecture around a Think, Plan and Execute workflow for task interpretation, planning and execution.
- Implemented orchestration, tool selection, multi-step execution and task verification with LangGraph and LangChain; integrated RAG, contextual memory and vector search.
- Designed an AWS deployment using ECS/Fargate, ECR, RDS, S3 and ElastiCache, with CloudWatch for monitoring.

2. ReplyFlow | *AI Customer Operations Platform*

Tech: Python, FastAPI, LangGraph, LangChain, PostgreSQL, pgvector, Redis, Kafka, Next.js, TypeScript, Docker, AWS ECS/Fargate, ECR, RDS, S3, ElastiCache, CloudWatch, IAM

- Developed an AI platform for customer enquiries and support workflows, with intent classification, RAG, tool calling and contextual response generation.
- Integrated streaming conversational interactions with backend services for responsive customer experiences.
- Designed an AWS deployment using ECS/Fargate, ECR, RDS, S3 and ElastiCache, with CloudWatch for observability.

3. FraudSentinel | *AI-Powered Payment Fraud Detection*

Tech: Python, XGBoost, LightGBM, PyTorch Geometric, GraphSAGE, FastAPI, NestJS, PostgreSQL, Redis, Kafka, Docker, Prometheus, Grafana, AWS ECS/Fargate, ECR, EC2, RDS, S3, CloudWatch, IAM

- Developed a fraud detection platform combining gradient boosting and graph-based ML; engineered 27 transaction features and a multi-model scoring approach (XGBoost, LightGBM, GraphSAGE).
- Implemented ALLOW, REVIEW and BLOCK risk decisions, integrating ML scoring with backend services and event-driven transaction processing.
- Designed an AWS deployment using ECS/Fargate, ECR, RDS, S3 and CloudWatch for containerised inference, model artefact storage and monitoring.

4. WellSense | *Predictive Maintenance & Intelligence Platform*

Tech: Python, FastAPI, scikit-learn, Isolation Forest, Random Forest, PostgreSQL, SQLAlchemy, Next.js, Docker, AWS EC2, S3, RDS, IAM, CloudWatch

- Developed predictive analytics and anomaly detection for well-related datasets using Isolation Forest, Random Forest, Z-score and IQR-based approaches.
- Built FastAPI inference workflows and integrated model-generated insights with a web application.
- Designed an AWS deployment using EC2, S3, RDS, IAM and CloudWatch for hosting, dataset and model storage, and monitoring.

5. Kora | *AI Robotics & Autonomous Systems*

Tech: Python, ROS 2, Nav2, SLAM, AMCL, MoveIt 2, YOLOv8, OpenCV, Ollama, Next.js, Three.js, TypeScript, Docker, AWS IoT Core, EC2, S3, CloudWatch, IAM

- Designed a robotics architecture combining perception, autonomous navigation and task planning, with computer vision and language-model components.
- Connected robotics capabilities with AI agent services and a web-based 3D interface using Next.js and Three.js.
- Designed an AWS integration using IoT Core, EC2, S3 and CloudWatch for device communication, cloud-side processing and monitoring.

EDUCATION

Bachelor of Engineering (B.Eng.), Petroleum Engineering

University of Benin, Nigeria | Second Class Upper Division (2:1)

CERTIFICATIONS & PROFESSIONAL DEVELOPMENT

- Microsoft Data Science Professional (Gold) | AI Skill Accelerator | SQL and JavaScript (Udemy)

PROFESSIONAL INTERESTS

AI Systems Engineering | Agentic AI | Autonomous Agents | LLM Applications | RAG | Distributed Systems | Cloud-Native Applications | Machine Learning Systems | Robotics and Autonomous Systems