Fadekemi Fadare

AI Engineer | AI Evaluation, Agentic Systems, RAG & Applied ML | Product-Focused AI Development

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PROFILE

AI Engineer building and deploying end-to-end AI systems across **LLM evaluation, retrieval-augmented generation, multi-agent systems, structured-output pipelines, model validation and production deployment**. Experienced in translating complex AI requirements into reproducible technical workflows, including model and API integration, prompt and configuration management, repeated model execution, structured data pipelines, output validation and automated processing of model responses. Has built AI products spanning mental health, maternal health, financial technology and infectious-disease forecasting, with systems deployed through WhatsApp, web applications and cloud infrastructure. Current work at SRHIN includes conversational health AI systems and **SRHINMAMABENCH, a benchmark focused on safety failures in maternal-health conversational AI**. A background in clinical and health sciences complements technical work on AI systems requiring careful handling of health-related information, structured validation and clearly defined safety boundaries.

RELEVANT EXPERIENCE

AI Engineer (Contract) | Budi Digital Labs

Product: MyBudi, AI-powered budgeting and money-coaching app, Android & iOS

- Evaluated existing production AI models to identify accuracy, reliability and performance gaps, informing decisions on model selection and redesign of the underlying AI pipeline.
- Improved the application's multi-agent architecture, strengthening coordination, delegation and reliability across complex multi-step AI workflows.
- Added voice capabilities to the application's AI features, extending the product beyond text-based interaction.
- Worked within an existing production AI environment where technical changes required attention to model reliability and downstream product behavior.

AI Fellow | Slum and Rural Health Initiative (SRHIN) *2025 to present*

Maternal, Perinatal and Public Health AI

- Build and deploy production AI systems end to end, including a vaccination-tracking agent with scheduling logic and multi-channel reminders, and RAG-based conversational systems including BetaMama Companion and MamaWell AI deployed through WhatsApp and Google Cloud.
- Design structured AI workflows combining retrieval, generation, routing, validation and safety logic for health-related applications.
- Fine-tune LLMs using PEFT, LoRA and QLoRA, and develop Chain-of-Thought and few-shot prompting approaches for structured model outputs.
- Lead development of SRHINMAMABENCH, a benchmark and mitigation framework for evaluating escalation lag and safety failures in maternal-health conversational AI.
- Work with structured health-data pipelines and validation procedures for systems handling sensitive and safety-relevant information.
- Contribute to implementation and evaluation of conversational AI systems designed for low-resource and public-health settings.

Founding AI Engineer | Techcori (Kestrel) *2025*

AI Sales and Career Intelligence Platform

- Founded the AI engineering function and designed the platform's AI architecture from the ground up.
- Built end-to-end NLP pipelines for structured classification and scoring, including retrieval, enrichment and structured-output generation using GPT-4o with function calling.
- Built and maintained embedding pipelines and vector indexing with Supabase pgvector for hybrid SQL and semantic retrieval.
- Implemented structured-output validation across pipeline nodes and real-time streaming to a production analytics dashboard.
- Worked across FastAPI, PostgreSQL, OpenAI, LangChain, Tavily and Exa to translate product requirements into reproducible AI workflows.

Research Data Analyst | OurWritingAid *2026*

Nutrition & Health Research

- Designed structured questionnaires and analyzed primary survey datasets across health-related research studies.
- Conducted statistical analysis using pandas, scikit-learn, seaborn and matplotlib.
- Transformed raw questionnaire responses into clean, analysis-ready datasets using structured data-processing workflows.
- Produced research-report sections translating statistical outputs into interpretable findings.

Nutrition and Dietetics Intern (SIWES) | Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC)

Nutrition and Dietetics Department

- Rotated across six clinical units, gaining direct experience with structured patient-data collection, clinical assessment and care-planning documentation.

Nutrition and Health Education Intern | Osun State Primary Health Care Development Board (Kelebe)

Department of Nutrition Services and Health Education

- Supported community health-education programmes and behavioural change communication activities within a primary-health-care setting.

Feedback Analyst (Volunteer) | AICA *2024 to 2025*

- Analyzed qualitative and quantitative stakeholder feedback to identify recurring themes and converted findings into structured summaries and recommendations.

SELECTED AI AND EVALUATION PROJECTS

SRHINMAMABENCH | Escalation Lag Benchmark

- Designing a benchmark and mitigation framework for measuring escalation lag in maternal-health conversational AI, including the point at which evolving user information should trigger a stronger safety response.
- Developing structured evaluation criteria for multi-turn conversational safety rather than relying only on aggregate model-performance measures.

BetaMama Companion | Maternal Health RAG Chatbot

- Built a maternal-health RAG system using hybrid retrieval with Supabase and Tavily, deployed through WhatsApp and web.
- Achieved 92.4% retrieval precision and a 55% reduction in hallucinated medical information compared with non-RAG baselines.
- Implemented retrieval and generation as structured components, enabling individual stages of the system to be evaluated and improved separately.

Mamawell AI | Perinatal Mental Health Companion

- Developed a perinatal mental-health conversational system with crisis-detection capabilities.
- Achieved 100% sensitivity and 98.3% specificity in the project evaluation across five Nigerian languages.
- Work on embedding crisis safeguards into the system has been accepted for presentation at international digital-health and AI-in-healthcare conferences.

Vaccination Tracker | Immunization Scheduling Agent

- Built an automated vaccination-tracking agent integrating scheduling algorithms, geolocation-based primary-health-centre recommendations and multi-channel reminders.
- Integrated WhatsApp, Gmail and SMS through Twilio for real-world use across primary health centres in Oyo State, Nigeria.

EpiWatch AI | Infectious Disease Outbreak Forecasting

- Built an outbreak-forecasting system covering cholera, Lassa fever, mpox and dengue across African settings.
- Implemented seasonal-pattern modelling, Wilson confidence intervals and leave-one-year-out validation.
- Deployed the prediction workflow through FastAPI on Railway.

AIRA | AI Research Assistant

- Built an NLP-powered research assistant that automates literature-review workflows, performs descriptive analysis of categorical datasets and generates data visualizations from natural-language queries.

CystaCare | PCOS Education Chatbot

- Engineered a hybrid RAG agent with routing between an internal vector knowledge base and real-time evidence-backed retrieval.
- Added intent-detection and scope guardrails designed to prevent the system from moving beyond its intended health-education boundaries.

BetaMama-FP | Family Planning Chatbot

- Developed a WhatsApp-based family-planning information and support pathway within the BetaMama Pikin ecosystem for underserved communities in Oyo State.

Family Planning Reminder Service

- Built a multi-channel reminder service supporting continued family-planning follow-through across the BetaMama Pikin ecosystem.

BetaMama Care | Antibiotic Dosing and Safety Checker

- Extracted structured drug-protocol data from WHO source documents into a strict extraction-only knowledge base.
- Used the structured knowledge base to support a hardcoded clinical-rules antibiotic dosing and safety checker combined with RAG retrieval.

Omidan | Perinatal Mental Health Screening for Midwives

- Built a web-based perinatal mental-health screening application supporting midwives in identifying mothers who may require further assessment or support during routine care.

Techcori | AI Career and Recruitment Platform

- Founding AI engineer responsible for retrieval, enrichment, classification and structured-output workflows for an AI-powered career and recruitment platform developed for the Nigerian market.
- Platform submitted to the AIVA Technovation accelerator.

PUBLICATIONS

- Chen, Y., Adesina, M., Sambo, Y., Oladejo, E., Olufadewa, I., Mohammed, A.H., Onireti, O., Okediji, I., Popoola, O., Oladele, R., Ansari, S., Imran, M., Fadare, F., Oso, O. (2026). **Assessing the Usability, Satisfaction, and Acceptability of a 5G-Enabled Telemedicine Model among Internally Displaced Persons in Nigeria.** Smart Health. Writing, review and editing.

PUBLICATIONS (CONTINUED)

PREPRINT

Beyond the Context Window: An Adaptive Entropy-Based Routing Framework for Hybrid Retrieval and Long-Context Language Models
Authors: Isaac Olufadewa, Miracle Adesina, Ezekiel Oladejo, Owen Adeniyi, Fadare Fadekemi, Olamide Oso, Uthman Babatunde, Matthew Olawoyin
Venue: arXiv · 2026 | **Category:** Computation and Language (cs.CL) | **Role:** Co-author
View Preprint

CONFERENCE ABSTRACT

Building BetaMama Companion: Development of a Retrieval-Augmented Conversational AI System for Maternal and Child Health Guidance in Nigeria
6th SHI Maternal Health & Rights Summit · Lagos, Nigeria · June 4, 2026
Authors: Fadekemi Fadare, Miracle Adesina, Julianah Adedoyin Adesina, Mary Akinwola, Mukthar Islamiyat Damilola
Poster Presentation · Presenting Author: Fadekemi Fadare | **Abstract ID:** AS-SHI-012
Sub-theme: Leveraging Digital Health and Technology for Maternal Care

CONFERENCE ABSTRACT

Omidan
An AI-powered clinical decision support platform embedding maternal mental health screening into routine antenatal care for Nigerian frontline providers.
Oxford Clinical AI for Healthcare Leaders Conference 2026
Somerville College, Oxford, United Kingdom · June 25, 2026
Authors: Mary Akinwola, Fadekemi Fadare, Miracle Adesina, Julianah Adesina, Mukthar Islamiyat Damilola
Clinical AI Showcase · Role: Co-Author | **Presenter:** Mary Akinwola

CONFERENCE ABSTRACT

Mamawell AI: Embedding Crisis Safeguards into a Generative AI Mental Health Companion on WhatsApp
Global Digital Health Forum (GDHF) 2026 · Bangkok & Online · December 2–4, 2026
Authors: Fadekemi Fadare, Miracle Adesina, Islamiyat Mukhtar, Julianah Adesina, Mary Akinwola
Accepted for presentation · Main Presenter: Fadekemi Fadare | **Session Type:** Virtual Lightning Talk

EDUCATION

MSc Financial Engineering | WorldQuant University
In progress | Quantitative finance focus

B.Sc. Human Nutrition and Dietetics, Second Class Upper | Osun State University
2021 to 2025

Postgraduate Diploma in Computer Science
In view

DataCamp Certifications
Associate Data Analyst with Python | Associate Data Scientist | AI Engineer for Data Scientists | 2024 to present

TECHNICAL SKILLS

AI Evaluation and Workflow Development: benchmark pipelines, repeated model execution, structured model outputs, model/API integration, output validation, prompt and configuration management, evaluation-data pipelines, reproducible AI workflows
LLM and Agentic Systems: GPT-4o, OpenAI API, RAG, hybrid retrieval, LangChain, LangGraph, CrewAI, prompt engineering, Chain-of-Thought prompting, few-shot prompting, structured outputs, function calling
Machine Learning and NLP: LLM fine-tuning, PEFT, LoRA, QLoRA, NLP classification, intent detection, embeddings, model evaluation and validation
Vector Search and Retrieval: Supabase pgvector, vector indexing, embedding pipelines, hybrid SQL and semantic search
Backend and AI Infrastructure: Python, FastAPI, PostgreSQL, SQLAlchemy, Tavily, Exa, SendGrid, Twilio, WhatsApp Meta API
Deployment and Serving: Google Cloud, Render, Hugging Face, FastAPI async workflows, streaming, SSE, JWT authentication, rate limiting
Frontend: React 18/19, Vite, TailwindCSS, Streamlit, vanilla JavaScript
Research and Quantitative Methods: structured questionnaire design, data cleaning, statistical analysis, pandas, scikit-learn, seaborn, matplotlib, clinical and health-data validation
Clinical and Health Context: nutritional assessment, dietary counselling, anthropometric data collection and classification, public-health communication, structured clinical documentation