

Rich Kitibwa

Software & Product Engineer · Applied AI · Health
Technology

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PROFILE

Software and product engineer with over six years of experience building AI systems, clinical software and digital products, after starting my career as a medical laboratory technologist. I work across frontend, backend, mobile, data and infrastructure, and with clinicians, product owners and business stakeholders, to turn complex requirements into software that works in the real world. Co-author of a published clinical evaluation of AI decision-support software.

EXPERIENCE

MamaOpe Medicals · Kampala, Uganda Feb 2021 – Present
Software Engineer — Full-Stack, AI/ML, Signal Processing & QA

- Engineer on HealthNavi, a clinical decision-support system for respiratory illness piloted in Uganda, with a pilot under way in Zambia. Co-authored its published Uganda evaluation: 168 patients across five Kampala facilities, with 92.3% sensitivity for pneumonia and 89.5% for TB against clinicians' final diagnoses.
- Built the retrieval and model service behind Empirico (empirico.ai), a medical knowledge platform: PDF ingestion from AWS S3, Azure OpenAI embeddings, Zilliz/Milvus hybrid search and Gemini generation behind a FastAPI service, with source-diversified retrieval and page-level citations.
- Improved latency, cost and reliability with embedding and response caching, quick vs. deep search modes, streaming responses, rate limiting, concurrency controls and Docker-based deployment.
- Developed HealthNavi features across a React/TypeScript frontend, FastAPI backend and PostgreSQL, integrated it with the Empirico API, and evaluated AI responses against clinical reference answers.
- Worked on the MamaOpe smart auscultation device: hardware prototyping and testing, MATLAB respiratory-rate estimation from chest sounds, and Android (Java/Kotlin) device integration.

Bench Sports Media · benchsports.com Mar 2026 – Present
Software Engineer

- Implemented pay-per-view and subscriber access, card-driven checkout and Stripe Connect creator flows, and creator channel onboarding for a sports streaming platform.
- Built live-streaming features with Mux (in-app preview, live chat, viewer counts and tipping) and fixed live streams ending early on mobile.
- Built out the Expo/React Native mobile app and met App Store and Google Play requirements (Sign in with Apple, in-app account deletion).

Stack: Next.js · React Native/Expo · TypeScript · Mux · Stripe Connect · Clerk · Vercel

Ascension Services · ascensionservices.net May 2025 – Present
Software Engineer

- Full-stack engineer on an enterprise procurement platform (suppliers, RFQs, purchase orders, inventory, payments); 700+ commits across the FastAPI backend and Next.js frontend.
- Built purchase-order amendments and cancellations, approval forwarding, quote-integrity checks and printable procurement documents.
- Implemented trial and subscription lifecycle emails, and moved supplier emails to Celery/Redis background queues.

Stack: Python · FastAPI · Next.js · TypeScript · PostgreSQL · Alembic · Celery · Redis · Docker

Powem · Nairobi, Kenya (remote) · powem.co Jun 2019 – May 2020
Software Engineer

- Built, tested and maintained React web applications in a small agile team, working remotely.

- Performed diagnostic testing across clinical chemistry, haematology and microbiology under rigorous quality control.

SKILLS

Languages	Python, TypeScript, JavaScript, Java, Kotlin, MATLAB
Web & mobile	React, Next.js, React Native/Expo, Android
Backend	FastAPI, Flask, Node.js, Celery; familiar with Spring Boot, Django
AI & data	RAG, LLM integration (Gemini, OpenAI), embeddings, vector & hybrid search (Milvus/Zilliz), signal processing
Data & cloud	PostgreSQL, Redis, MongoDB, Docker, AWS, Google Cloud, DigitalOcean, Vercel, CI/CD
Practices	Requirements analysis, system design, testing & QA, payments (Stripe Connect), HL7 FHIR

EDUCATION

BSc Biomedical Laboratory Technology
Makerere University · Jan 2022

CERTIFICATIONS

Introduction to Computer Science and Programming Using Python, MITx (edX), Mar 2024
Introduction to Computational Thinking and Data Science, MITx (edX), May 2024

PUBLICATION

Babirye S, Turyabagye B, Tigist M, et al. (incl. Kitibwa R). *Performance Evaluation of a Clinical Decision Support System (MAMAOPE AI) for Tuberculosis and Pneumonia Diagnosis*. VeriXiv 3:147 (preprint), Apr 2026. doi:10.12688/verixiv.2433.1