

HARRISON ONYANGO ALOO

Backend Software Engineer — Node.js · Python · Payment Integrations

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SUMMARY

Backend engineer who ships systems that move money. I have taken M-Pesa Daraja integrations to production three times — a usage-based billing engine for a multi-tenant SaaS with paying customers, a contributions and claims platform for a Kenyan welfare association, and commission splitting on a job marketplace — with the idempotent charges, verified callbacks and reconciliation that asynchronous mobile money requires. Day to day that means REST API design in Node.js and Express, schema design across PostgreSQL and MySQL, JWT and role-based access control, and Linux servers over SSH. I also support what I ship: my freelance clients are non-technical, so explaining a failed reconciliation clearly is part of fixing it. BSc Software Engineering, University of Eastern Africa Baraton.

TECHNICAL SKILLS

Backend: Node.js, Express.js, Python, FastAPI, PHP (Laravel and custom MVC), REST API design, JWT authentication, Role-Based Access Control, Socket.io, WebSockets

Databases: PostgreSQL, MySQL, MongoDB, Supabase, schema design, migrations, multi-tenant data modelling

Integrations & Payments: M-Pesa Daraja API (STK Push, C2B, B2C, callbacks, reconciliation), WhatsApp Cloud API, Meta Graph API, OpenAI API, webhooks, OAuth 2.0

Frontend: React, TypeScript, Next.js, React Native (Expo), Tailwind CSS

Infrastructure & Practices: Linux (Ubuntu) and SSH, Docker, Nginx, PM2, Redis, BullMQ, CI/CD (GitHub Actions), Git and GitHub, Vercel, Railway, Render, Agile delivery, code review, technical documentation

EXPERIENCE

Backend Engineer — Imara Logic

Contributing engineer on a five-person team · multi-tenant WhatsApp commerce SaaS · imaralogic.co.ke | Sep 2025 – Jan 2026, ongoing contributor

- One of two core engineers on a five-person team building a production SaaS that turns WhatsApp into a full sales channel for African businesses — now live with paying customers. ~166k lines, 612 route handlers, 144 tables; 551 of 1,332 commits mine.
- Built the multi-tenant isolation layer: every query scoped to a tenant, with a binding mapping each inbound Meta phone-number ID to exactly one tenant and guards preventing cross-tenant sends, covered by regression tests.
- Designed a usage-based billing engine on the M-Pesa Daraja API — idempotent charges, a pending-to-paid state machine, webhook resolution, and a reconciler that sweeps payments stranded when a callback never arrives.
- Built WhatsApp Cloud API webhook ingestion and in-thread commerce (catalog, cart, checkout, delivery-zone pricing, receipts) with a graceful degradation chain across interactive, plain-text and approved-template messages.
- Built the React and TypeScript operator dashboard — virtualised multi-channel inbox, CRM pipeline, campaign composer, analytics and billing.

Freelance Backend Developer — Self-Employed

Remote, Nairobi | Aug 2025 – Present

- **Shena Companion Welfare Association** (shenacompanion.co.ke) — built a member-management and payments platform on a custom PHP MVC framework and MySQL for a Kenyan funeral-benefit association, integrating M-Pesa STK Push for contribution collection with automated reconciliation.
- Implemented the claims submission workflow and agent commission engine, replacing a manual paper-based process, plus bulk SMS and email delivery for member notifications and payment reminders.
- Act as first-line support for every client system I have delivered — diagnosing payment and reconciliation issues reported by non-technical users over email, and explaining the cause and the fix in plain language.

Software Engineer (Intern) — Taquana Ltd

NGANYAAPP fleet management and booking platform · nganyaapp.com · Nairobi | May – Jul 2025

- Integrated GPS telemetry APIs and built automated scheduling for a fleet-management platform used by transport operators across Kenya.
- Built responsive interfaces for three user roles — dispatchers, drivers and administrators.
- Worked in an Agile team, contributing to sprint planning, code review and iterative delivery.

SELECTED PROJECTS

FishCrewConnect — Job marketplace and payments platform for Kenya's fishing industry

React Native (Expo) · Node.js · Express · MySQL · Socket.io · M-Pesa Daraja | github.com/Flopchamp/FishCrewConnect | fish-crew-connect.vercel.app

- Designed and shipped a three-application platform — mobile app, React admin dashboard and Node/Express API on MySQL — connecting fishermen, boat owners and crew across 105 commits.
- Implemented relationship-scoped messaging so users can only contact counterparties they have an active application with, enforced at the API layer alongside JWT authentication and role-based access control.
- Integrated M-Pesa Daraja payments with backend-verified callbacks and automatic platform commission splitting, plus Socket.io for real-time messaging and status updates.

ENIGMA APEX — Real-time trading compliance engine

Python · Streamlit · OpenCV · Tesseract OCR · WebSockets | github.com/Flopchamp/ENIGMA_APEX_PROFESSIONAL_ALGO_TRADER

- Built a rules engine that evaluates proposed trades against the drawdown and risk limits of two proprietary trading firms and blocks breaches before execution.
- Extracted live trading signals via OpenCV and Tesseract OCR where no vendor API exists, applying Kelly Criterion position sizing across a six-chart Python dashboard.

EDUCATION

BSc Software Engineering — Second Class Upper Division

University of Eastern Africa, Baraton, Eldoret, Kenya | Aug 2021 – Aug 2025

Certificate in Artificial Intelligence (TVETA Certified)

Moringa School, Nairobi, Kenya | Nov – Dec 2025

TECHNICAL WRITING

9 articles on backend engineering — API security, database schema design, observability, production API design, and M-Pesa integration. harrisononyangoaloo.vercel.app/blog