

KIFLEMARIAM SIUM

Senior AI Software Engineer | Node.js, NestJS, React, React Native, TypeScript, API Design, AWS, AI/Agentic Systems (Claude, MCP)

kmsium@gmail.com | +250 782 344 296 | [linkedin.com/in/kmsium](https://www.linkedin.com/in/kmsium) | sammysium.com | Kigali, Rwanda (UTC+2, Central Africa Time)

PROFESSIONAL SUMMARY

I build APIs that survive the real world. Over 9 years, I've designed fault-tolerant systems serving 1M+ farmers across Africa—most without reliable internet. This taught me to think in constraints: offline-first sync, cascading failure prevention, 30-second financial reports at scale. Recently: built diagnostic AI agents with Claude/MCP. Established org-wide chaos engineering practices that caught critical infrastructure gaps before they hit users. 7 years async/remote, 8 countries.

TECHNICAL EXPERTISE

Backend & APIs: NestJS, FastAPI, REST/GraphQL design, microservices architecture, JWT auth, API contracts, Node.js, Python

Full-Stack: React, React Native, TypeScript, Redux — production-shipped

AI Systems: Claude/MCP, agentic tool-calling, OpenAI integration, deterministic LLM-safe write paths

Infrastructure & Reliability: AWS (Solutions Architect certified), Docker, CI/CD (GitHub Actions, Azure DevOps, Jenkins), chaos engineering (ChaosToolkit), load testing (Artillery), Couchbase Lite offline-sync, Sentry, Grafana, Prometheus

Databases: PostgreSQL, MongoDB, Couchbase, Redis

PROFESSIONAL EXPERIENCE

Senior Software Engineer, Platform & Reliability

One Acre Fund | Jan 2019 – Present | Kigali, Rwanda (Hybrid) | NGO serving 1M+ smallholder farmers across 8 African countries

Pipeline Sherrif AI Agent | NestJS, Ollama/Anthropic Claude, MCP, Couchbase, Redis — Tech Lead & Architect

- Built AI diagnostic agent (Claude/MCP) that automatically detects and fixes data integrity issues from mobile/web platforms, eliminating manual support tickets.
- Detects stale on-device data causing miscalculations or missing records, and triggers a remote refresh automatically — no manual intervention needed.
- Detects when firebase remote configuration feature is disabled and automatically flips it back on — no ticket, no release needed.
- Detects when the underlying data itself is missing a flag a report depends on, silently excluding real records, and escalates it straight to the owning team via email so cautious

decision is made

- Detects integration gaps between Couchbase and backend systems (Fineract, Odoo) that are actually affecting users, distinguishing "data never synced" from "data doesn't exist upstream."
- Reduced average support debug time by 60+ minutes per incident through automated detection and remediation—validated in pre-live customer testing.

FieldTech React Native Platform — Backend Systems & Platform Architecture

- Designed and shipped a data-dependency sync engine that intelligently sequences offline document submission to prevent cascading failures — core to reliable field operations in zero-connectivity environments
- Achieved offline-first sync with 1-minute sync times and support for 1M+ on-device documents; shipped 19 production releases including country-specific deployments with CI/CD pipelines on Azure DevOps
- Authored react-native-couchbase-sync-gateway SDK, abstracting the Java sync bridge; reduced engineer onboarding by 80% and standardized offline-sync across the platform.

Reliability Engineering & Performance

- Prevented a Kenya production disaster by establishing org-wide chaos engineering framework (Artillery + ChaosToolkit); identified infrastructure breaking points at 3,000 concurrent users before launch, de-risking major deployment.
- Automated weekly reliability testing via Jenkins with custom dashboards and Slack reporting; trained QA engineers on load testing methodology, making pre-release validation standard practice.

FieldSmart — Kotlin & Backend Systems & Platform Architecture

- Designed next-gen offline-ready Kotlin app generating site summaries in under 3 seconds; integrated background syncing to sync 500,000 NoSQL documents in less than a minute
- Reduced crash rate by 94% (17→1 per session) through payload optimization and improved state management, directly enabling field teams to work without interruptions.

FieldSupport — Financial Reporting Backend

- Built REST APIs generating financial repayment reports at client, group, and site level in under 30 seconds for a dataset spanning 1M+ farmers across 8 countries
- Engineered a server-side caching layer that cut report render times by 75% (6 minutes → 1.5 minutes); identified and resolved a critical data bug falsely marking non-paying farmers as healthy

Lead Full Stack Engineer & Tech Lead

GO Ltd | May 2017 – Dec 2018 | Kigali, Rwanda

- Architected and shipped AgriGO digital agriculture platform from MVP to production solo (2 months), designing PostgreSQL schema and Django backend serving 7,000+ farmers with transactional workflows, payment processing, and JWT-secured APIs.
- Built 40+ secure RESTful endpoints in Django; integrated weather APIs, payment gateways, and SMS/email notification providers; built an automated daily crop-care advisory engine — the platform's most-used feature
- Scaled from solo engineer to leading a team of 2 developers and 3 interns after launch

EDUCATION & CERTIFICATIONS

- AWS Certified Solutions Architect – Associate (2025)
- Couchbase Certified Android Developer
- BSc Computer Science — Eritrea Institute of Technology (GPA: 3.4)
- BA Healthcare Administration — Southern New Hampshire University