

Bruce Nkundabagenzi

Full-Stack Software Engineer

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PROFILE

Full-stack product engineer specializing in complex, multi-module backend systems — production experience with payment integrations (mobile money, cards) and tax compliance, shipping web and mobile from a single API.

SKILLS

Backend: Node.js, NestJS, Express.js — REST API design, multi-tenant architecture

Frontend: Next.js, React, TypeScript (strict)

Mobile: Expo / React Native

Data & Infra: PostgreSQL, TypeORM, Redis, Bull (background jobs/queues), Socket.IO (real-time)

Payments & Compliance: Mobile money & card integrations, tax/fiscal-compliance systems

Practices: System design, versioned migrations, security & correctness auditing, Git/GitHub

EXPERIENCE

Software Developer (Sole Engineer, Full Stack + Mobile)

Sept 2025 – Present

Restaurant Management SaaS — Confidential Client · Kigali, Rwanda

Sole engineer across backend, web, and mobile on a multi-tenant restaurant management platform

(NestJS · Next.js · Expo · PostgreSQL · Redis/Bull) with real-time fiscal compliance across 28 modules. Team of three (designer, deployment engineer, me); I own all application engineering and architecture.

- Led implementation of real-time tax/fiscal compliance across the platform: device registration and TIN validation, automated receipt signing on every sale, and resilient retry via Bull/Redis background workers — including a Redis-lock rate limiter to respect the compliance endpoint's limits under concurrent load.
- Conducted a full-system correctness and security audit of the 28-module codebase; identified and severity-rated 53 issues spanning tenant isolation, webhook signature verification, and ledger integrity, then executed a remediation program to closure.
- Hardened the double-entry accounting core: append-only journal entries enforced at the ORM layer, reversal linkage preventing double-reversals, accrual-based revenue recognition, and posting guards blocking deletion of posted financial records.
- Built and maintain interconnected operational modules — orders, real-time stock depletion with append-only movement logs, production recipes, payroll, AR/AP, expenses — where one completed order drives inventory, revenue, tax, and compliance records in a single consistent transaction.
- Enforced multi-tenant data isolation across every module: JWT-derived tenant scoping on all queries, role-guarded routes for seven business roles across web and mobile clients.
- Designed a spec-driven, AI-assisted development workflow for the codebase: binding agent rules, invariant pre-flight checks for financial modules, and protected-file boundaries — enabling safe agentic development inside a production financial system.

Full-Stack Developer & Instructor

March 2026 – Present

WithinTech Learn (learn.withintech.org) — Remote

E-learning platform serving 750+ students, built by a 3-developer remote team across the US and Rwanda. pnpm monorepo: Next.js web, Express.js API.

- Built the platform's learning core: a three-level course hierarchy (course → module → sub-module) with gated progression and quiz assessment at every level.
- Built the automated email engagement system — invitations, reminders, and performance-based rewards for top challenge performers.

- Introduced internationalisation with next-i18next, taking the platform from English-only to English, French, and Kinyarwanda.
- Integrated subscription payments with a local fintech provider — sourced the partner and handled initial configuration.
- Teach web development across two schools, bridging technical knowledge with job opportunities for youth in the edtech space.
- Collaborate async across US/Rwanda timezones inside an existing codebase with clear ownership boundaries.

PROJECTS

SubTrack

Full-stack subscription & recurring-expense tracker · subtrack-web-two.vercel.app

- Solo-built monorepo: Next.js web app, Expo React Native mobile app, and a NestJS API — both clients consume a single documented API contract with zero drift.
- Automated renewal tracking via daily scheduled jobs writing an append-only payment history; multi-currency support with cached FX rates and graceful degradation on cache miss.
- Versioned TypeORM migrations from day one, self-rolled JWT auth with per-platform refresh-token transport (httpOnly cookie on web, SecureStore on mobile), strict TypeScript.

EDUCATION

Software Engineering & Embedded Systems

Sep 2022 – Jul 2025

Rwanda Coding Academy, Nyabihu

Completed a 3-year specialized program in the software development lifecycle, embedded programming, and system integration through hands-on projects.

General Studies

Jan 2019 – Jul 2022

Groupe Scolaire St. Bernadette Save, Gisagara

EARLY EXPERIENCE

Front-End Developer

May – Jun 2024

Creative Tim

Built an internal kanban board for organisation-wide task tracking, with a team of 5.

Developer

Jan – Jul 2025

TV1

Built a content management system used internally to update the company's websites, with a team of 6.

LANGUAGES

English: Proficient · Kinyarwanda: Proficient