

FRANCIS NDUAMAKA

Software Architect, AI-Native Education Platforms

+2348107180312 | francis.nduamaka@gmail.com | ellai.dev | francis.nduamaka.ellai.dev
github.com/Bastieno | linkedin.com/in/francis-nduamaka

PROFESSIONAL SUMMARY

Senior AI Application Developer with 7+ years of experience in TypeScript, React, Python, and PostgreSQL, specializing in production-grade AI systems. Designs and builds agent-native systems, where an AI agent and the user interface are equal partners over one set of operations, and has taken two education products from empty repository to working platform solo: Ellai (AI study platform) and a school operating system built for Nigerian secondary schools and portable to any country's structure. Comfortable across the full stack; strongest in TypeScript, React, Node.js, and the design of systems that non-technical people actually operate. Has led small teams and worked remotely with companies in the US, South Africa, and Nigeria.

EXPERIENCE

Principal Engineer

Jan 2026 – Present

Agent-Native School Platform (School Operating System for African Schools)

Lagos, NG

- Architecting a complete school operating system across admin, teacher and student portals: curriculum, lesson planning, assessment, marking, reporting and analytics, built for Nigerian secondary schools and portable to any country's structure
- Designed the agent-native architecture so every operation is defined once as an *action* (130+) and served three ways: the React UI, the in-app AI agent, and external agents over the Model Context Protocol
- Built authorization as a single guard over every action, with four school roles and row-level class scoping, so a teacher cannot reach another teacher's gradebook by UI, HTTP endpoint or agent tool call
- Built the curriculum system: subjects, units, learning objectives and week-by-week pacing, with agent-assisted co-authoring sessions that stay drafts until committed atomically
- Built a syllabus import that turns a school's own scheme of work into a first-class standards library, keeping per-objective provenance and marking generated codes so no invented reference is quoted to a parent as official
- Automated weekly lesson notes from the agreed pacing, including test, practical and revision weeks, with autosave, ready and reopen states that record who approved each note, and a school-wide view of what is unprepared
- Separated teacher plans from learner-facing pages, since a plan holds the starter questions before they are asked, and made the app draft each week's learner page so teachers never write the week twice
- Built assessment end to end: activities from flashcards to timed examinations, difficulty-tiered variants, rubric and points marking with a marking queue, gradebook, report cards and per-objective analytics
- Kept the platform country-agnostic: terms or semesters, year-group names, grading scales, pass marks and examination weeks are all school data, matched by Unicode collation rather than English text parsing
- Wrote the agent's operating guide: role-specific behaviour, tutor mode that never hands learners answers, confirmation before irreversible actions, and a standing rule never to invent a number

Senior Software Engineer

Nov 2023 – Dec 2025

Elite Software Automation

Texas, US (Remote)

- Build AI-powered automation tools for enterprise clients using Python, LangChain, and custom pipelines deployed on AWS ECS and Kubernetes
- Own frontend architecture across multiple client projects: component libraries, design systems, and shared tooling that other engineers build on top of
- Set up CI/CD pipelines with GitHub Actions and Terraform for client projects where none existed, replacing error-prone manual deployments
- Connect no-code platforms (n8n, Bubble.io, UI Bakery) to custom backends, enabling non-technical teams to build and manage their own workflows
- Mentor junior engineers through code reviews, introduce linting and pre-commit hooks, and establish review processes where teams are growing fast

Senior Frontend Engineer & Technical Lead

Sep 2021 – Dec 2022

*Fulfil.io**California, US (Remote)*

- Led frontend architecture for a cloud ERP product (React, TypeScript, micro-frontends) covering shipping, manufacturing, inventory, and main client apps used by 20+ enterprise customers
- Drove the migration of a legacy AngularJS codebase to React; wrote the migration strategy and built test coverage with Jest and Cypress from near zero to 85%
- Standardised state management with Redux Toolkit and React Query, cleaning up ad-hoc data fetching and making the codebase significantly easier to reason about
- Introduced DataDog and Sentry across the frontend, giving the team its first real visibility into production errors and performance regressions

Lead Frontend Engineer & Team Lead

Feb 2020 – Sep 2021

*Opendeskng Ltd**Lagos, NG*

- Led a team of 4 engineers building First Bank of Nigeria's web banking application, the primary customer-facing product for 2M+ active users
- Built the app as a PWA with React and TypeScript; consistently scored 95+ on Lighthouse across performance, accessibility, and best practices
- Worked closely with backend teams to shape the REST and GraphQL APIs, cutting unnecessary round-trips and improving page load times
- Wrote the component library and enforced WCAG 2.1 compliance throughout; accessibility was a hard requirement given the regulatory context

Technical Interviewer & Code Reviewer

Aug 2020 – Nov 2021

*HyperionDev**South Africa (Remote)*

- Reviewed code and ran technical interviews for 250+ candidates, covering algorithms, data structures, system design, and full-stack fundamentals
- Built the evaluation rubrics used by the team and gave written feedback to candidates, many of whom were earlier-career engineers learning on the job

Software Engineer

Jun 2019 – Dec 2019

*Andela**Lagos, NG*

- Built and maintained RESTful APIs with Node.js, Express, and PostgreSQL handling high request volumes in production
- Added Redis caching on the heaviest endpoints, which cut response times significantly and reduced database load
- Wrote unit and integration tests with Jest and Supertest, reaching 90% coverage on the API layer

TECHNICAL SKILLS

AI & Agents: Anthropic Claude API, OpenAI API, Model Context Protocol (MCP), LangChain, Vercel AI SDK, n8n, Bubble.io, agent tool design

Architecture: agent-native systems, multi-tenant SaaS, role-based authorization, row-level data scoping, additive schema migration

Languages: TypeScript, JavaScript, Python, SQL

Frontend: React, Next.js, React Router, TailwindCSS, shadcn/ui, Styled Components

Backend: Node.js, Express.js, NestJS, FastAPI, GraphQL, REST APIs, Convex, Nitro

Databases: PostgreSQL, MongoDB, Redis, DynamoDB, SQLite, Drizzle ORM

Cloud & DevOps: AWS (EC2, ECS, Lambda, RDS, S3), GCP, Azure, Docker, Kubernetes, Terraform

CI/CD & Observability: GitHub Actions, DataDog, Sentry, Prometheus

Testing: Jest, Cypress, Playwright

EDUCATION

African University of Science and Technology

Jan 2018 – Jun 2019

*MSc in Computer Science (Distinction)**Abuja, NG***University of Ibadan**

Aug 2007 – May 2012

*BSc in Petroleum Engineering**Ibadan, NG*