

IDRISS OLIVIER BADO

Software Engineer · AI / ML Engineer · Mathematician

Full-stack & backend engineering | React / Python / PostgreSQL | Offline-first & event-driven systems | Cloud & on-premise

Abidjan, Côte d'Ivoire

+225 07 58 40 91 36

idrisbadoolivier@gmail.com

linkedin.com/in/idriss-olivier-bado

github.com/idrisbado

Remote-ready · West Africa

Professional Profile

Software engineer and applied mathematician with **7+ years** building and shipping production software and data systems across West Africa. I develop **full-stack and backend applications** with React, Python and PostgreSQL, and I have delivered services that run reliably in **low-connectivity field environments** — from payment and mobile-money processing to document and email automation. I care about clean development practices: version control with Git, automated tests, containerized environments, and CI/CD.

I work comfortably in **Agile, cross-functional teams** spread across countries and time zones, and I use modern **AI coding tools** (Claude Code, GitHub Copilot, Codex) to move faster without cutting corners. My mathematical background gives me a rigorous, problem-solving mindset that I bring to debugging, data modeling and system design.

Technical Expertise

FRONTEND & MOBILE	BACKEND & APIS	CLOUD, DEVOPS & PRACTICES	DATA & AI
• React, React ecosystem, TypeScript • Next.js, component-driven UI • Offline-first: service workers, local storage, background sync • REST API integration • Responsive, low-bandwidth interfaces	• Python (FastAPI, Flask), Node.js • REST API design & integration • PostgreSQL, SQL, NoSQL • Event-driven workflows, message queues (Kafka / AWS SQS-style) • Payments & mobile-money integrations	• AWS (EC2, S3, SQS), GCP • Docker, containerized dev environments • CI/CD: GitHub Actions, Jenkins • Git, test-driven development • Agile / Scrum, Jira	• ETL pipelines, data warehousing • Airflow, Spark, dbt • Python data stack, SQL analytics • LLMs, RAG, document & email automation • AI coding tools: Claude Code, Copilot, Codex

Professional Experience

Senior Software Engineer

Mar 2026 – Present

Ceiba-Analytics · Abidjan

Software applications, data infrastructure and automation for public- and private-sector clients — Port Autonome d'Abidjan (PAA), Ministry of Budget, Ministry of Construction, CGECI

Email Archiving & Automation Platform

- ▶ Solved a critical client problem where a **full mail server** blocked access to historical mailboxes: designed and built a **data-warehouse solution** that ingests and stores all incoming and archived email, so past correspondence stays searchable even when the mailbox is full
- ▶ Automated the extraction and loading directly on the server as a scheduled **ETL script**, running unattended to keep the archive continuously up to date
- ▶ Built downstream use cases on top of the archive: **automated email follow-ups**, tracking of client correspondence, and **mass / bulk email** workflows for outreach and activity reporting

Full-Stack Applications & Document Assistants

- ▶ Built full-stack web applications (React / Next.js front end, Python back end, PostgreSQL) for public-sector clients, exposing REST APIs consumed by non-technical staff
- ▶ Delivered a document assistant that answers questions over a corpus of French administrative documents using semantic search (Qdrant vector database) coupled with a language model and source-passage citation — running fully on-premise with no external dependency
- ▶ Industrialized the full train–deploy–monitor pipeline (MLflow, GitHub Actions CI/CD, inference on Kubernetes)

Data Platform, Cloud & Infrastructure

- ▶ Architected a **cloud-to-on-premise migration** (Ministry of Budget): Ubuntu Linux, Windows Server, load-balanced Nginx, PostgreSQL clusters — zero-downtime cutover, **40% infrastructure cost reduction**
- ▶ Designed a **multi-layer data platform** (Bronze/Silver/Gold medallion architecture): raw ingestion, dbt transformations, PostgreSQL analytical marts, ML-ready feature tables
- ▶ Deployed and administered **Alfresco** archiving on AWS (EC2, Docker, PostgreSQL, Nginx, SSL) with production operations and incident recovery

- ▷ Built **Kafka + Spark Streaming** pipelines for the Port of Abidjan IoT platform — latency cut from T+1 day to <5 min

Mission Lead - National Beekeeping Sector Study

Oct - Dec 2025

SONET-CI | European Union · Côte d'Ivoire

- ▷ Full project leadership: methodology design, field coordination, ML-based analysis, deliverables
- ▷ Developed predictive models for production yield estimation and market price forecasting (ensemble methods)
- ▷ Built automated data pipelines with embedded ML quality scoring and anomaly detection

Senior Statistician - Endline Evaluation

Feb - Mar 2026

SONET-CI | Expertise France / FDSI - ACM Project

- ▷ Designed evaluation methodology with ML-enhanced indicator framework; built classification models for beneficiary targeting and impact prediction; developed automated data quality scoring with anomaly detection

Founder & Lead Architect – EconInsightLab

2025 – Present

econinsightlab.company · Regional – 16 ECOWAS/UEMOA Economies

West Africa Economic Intelligence Platform – macroeconomic, labor-market and conjuncture intelligence for institutions, policy units and operators across the region.

- ▷ Designed and built an **evidence-first regional intelligence platform** covering **16 West African economies** (UEMOA + wider ECOWAS context), with structured data engineering, advanced analytics and AI-assisted synthesis aligned with regional statistical harmonization logic (SHaSA-compatible)
- ▷ Engineered ingestion of **World Bank Open Data** and complementary sources (1990–2024 long horizon) into a governed data catalog, ensuring **country-to-country comparability** of macro, social and labor-market indicators
- ▷ Built an **Intelligence Search Engine** performing evidence retrieval, analytical ranking by country/indicator/recency and decision-grade report synthesis with explicit **evidence catalog, source lineage and limitations** – a trust posture designed for institutional and public-sector use
- ▷ Implemented a **conjuncture and structural-risk scoring engine** for early-warning signals on cycle deterioration, fiscal stress and external imbalances; integrated **Topological Data Analysis (TDA)** for hidden-pattern detection across cross-country indicator panels
- ▷ Developed a **labor-market intelligence module** surfacing role-level demand, compensation bands and structural shifts in formal-sector employment – relevant for evidence-based workforce and education policy
- ▷ Built an executive briefing engine generating board-ready **PDF and PowerPoint** outputs with citations, assumptions and limitations, replacing fragmented dashboard workflows
- ▷ Architected the enterprise workflow layer: API access, custom integrations, recurring monitoring and team-level distribution for strategy units, planning directorates, banks and development institutions
- ▷ **Stack:** Next.js, Python, PostgreSQL, vector retrieval, LLM orchestration, geospatial joins, automated report generation, Resend, secure auth, billing

Head of Data – Data & Analytics

Dec 2023 – Sep 2025

BIZAO · France · Côte d'Ivoire · Senegal · Morocco

Payments Platform & Production Services

- ▷ Designed and delivered BIZAO's first **unified data platform** on AWS + GCP (Kafka, Spark, Snowflake) across 4 countries — **50M+ transactions per month**
- ▷ Deployed a **real-time fraud-detection service** on the mobile-money flow (XGBoost + LightGBM ensemble, BentoML / Triton, <100ms P99)
- ▷ Built an **event-driven credit-scoring pipeline** (Spark, LightGBM, MLflow, automated retraining, SHAP explainability for regulatory reporting)
- ▷ Integrated **LLM-based automation** for reporting and insight synthesis — **15h+ of analyst time saved per week**

Leadership

- ▷ Defined and rolled out the **data & AI strategy** across 4 countries; built and led a cross-functional team of data scientists, ML engineers and analysts (code review, internal ML guild)

Senior MEL Data Specialist – Regional Coordination

Dec 2022 – Dec 2023

TechnoServe · West Africa · East Africa · India

- ▷ Built **offline-first data collection** pipelines (ODK / KoboToolbox/Commcare/Appsheet/Limesurvey) for agricultural programs operating in **low-connectivity rural environments** across multiple countries — directly matching field-facing, intermittent-connectivity constraints
- ▷ Regional ML/data architecture: yield-prediction pipelines, farmer segmentation, geospatial models; Power BI / R Shiny dashboards with embedded predictive analytics

RiskLogics

- ▷ Real-time ML/AI services with **<10ms inference**; full MLOps pipelines; Kafka/Spark streaming infrastructure; mentoring and ML governance standards

Lead Data Scientist & Consultant

2020 – 2022

Indexiom · Mazars CI · INEXA

- ▷ NLP (sentiment analysis, topic modeling), demand forecasting, customer segmentation; data-warehouse architecture, feature stores, ETL pipelines and MLOps practices for financial services and public sector

Software Engineer (Freelance)

2014 – 2017

Sinaibrain

- ▷ Built custom applications and designed **relational databases** (data modeling, query optimization, data integrity) for a range of clients
- ▷ Back-end / front-end integration, **REST APIs**, and data-processing automation; full project ownership from requirements to delivery

Engineering, DevOps & MLOps Practices

Git version control · test-driven development · Docker & containerized environments · Kubernetes / Helm · CI/CD (GitHub Actions, Jenkins) · Infrastructure-as-Code (Terraform) · MLOps (MLflow, model registry, automated retraining, drift & monitoring) · cloud & on-premise deployment (AWS, GCP) · Agile / Scrum with Jira · AI-assisted development (Claude Code, GitHub Copilot, Codex) · distributed cross-functional collaboration.

Academic Teaching - ML, Data Engineering & Quantitative Methods**Lecturer**

2021 – Present

Polytechnic University of Bingerville | CNAM Abidjan | UIST Abidjan

- ▷ **Courses:** Machine Learning Fundamentals · Deep Learning · Data Engineering & Pipelines (Airflow, Spark, dbt) · MLOps & Production ML · NLP · Time Series & Forecasting · Stochastic Processes · Spatial Data Science
- ▷ **Impact:** Trained 200+ students over 4 years; supervised 30+ research projects in predictive analytics, NLP, and computer vision; mentored students now working as ML/data engineers across Africa

Education

2025-2026	M.Sc. Computer Science (Software Engineering) – Woolf University
2023-2024	M.Sc. Pure Mathematics (Number Theory) – Univ. Bourgogne Franche-Comté, France
2021-2022	M.Sc. Mathematics & Applications – Aix-Marseille University, France
2017-2020	Statistical Engineering Degree (M.Sc. level) – ENSEA, Abidjan
2011-2014	B.Sc. Mathematics – UNISAT, Côte d'Ivoire

Certifications (selection)

- ▷ **GOMYCODE** 15-Month Software Engineering Program (2026)
- ▷ **HackerRank:** Software Engineer (Python, API) · Advanced SQL · Frontend Developer · **Docker** (DataScientist.fr) · **GCP** Essential Training
- ▷ **Oracle:** Oracle AI Database Foundations Associate · Oracle Cloud Infrastructure · Certified AI Foundations Associate · Agentic AI Certified Foundations Associate
- ▷ **WorldQuant University:** Applied Data Science Lab · Computer Vision Lab
- ▷ **Dataiku:** MLOps Practitioner · ML Practitioner · Generative AI Practitioner · Developer · Core Designer
- ▷ **Qdrant Essential** · **Denodo Platform 9** Developer Associate · **Dremio** Lakehouse Associate & Data Analyst

Open-Source Projects & Contributions

- ▷ **PyPI** (pypi.org/user/idrissbado): ML utilities, survey-data processing (ODK/KoboToolbox pipelines), econometric analysis, ETL automation and data-quality libraries – used by practitioners across Africa
- ▷ **GitHub** (github.com/idrissbado): active repositories in ML, data engineering (Airflow DAGs, dbt packages, Spark

jobs) and statistical computing; community-reviewed and contributed to

- ▷ **AFRIMATH** (afrimath.math.cnrs.fr): CNRS International Research Network – Number Theory & Informatics Section

Research & Publications (selection)

- ▷ **Information Graphs of Statistical Summaries** – *Afrika Statistika*, Vol. 20, No. 2, pp. 4411–4426, 2025. Published online August 6, 2026. doi:10.16929/as/2025.4411.352 (*statistics, Fisher information, information geometry*)
- ▷ **Topological Feature Engineering and Machine Learning for Economic Regime Detection in Côte d'Ivoire (1960–2022)** – preprint, 2026 (*applied AI, TDA*)
- ▷ **Cohomological Risk Scoring: A Topological Framework for Detecting Structural Inconsistencies in Financial Networks** – preprint, 2025
- ▷ **Monogeneity, index forms and power integral bases of multiquadratic number fields** (with F. Tanoé) – *under review*, Rocky Mountain Journal of Mathematics
- ▷ **The disorder number of rectangular grid graphs** – *under review*, Theory & Applications of Graphs (#1783)
- ▷ **40+ preprints** in number theory, combinatorics, applied probability and topological methods for ML (persistent homology, cohomological obstructions)

Languages

Bilingual English & French.
