

CHARLES NDIAYE

Software Engineer — Backend, Architecture & Machine Learning

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PROFILE

Software engineer from ISEN with a passion for building robust software systems, end-to-end from architecture to deployment. I've built several production-grade systems — business-critical APIs, a real-time monitoring platform, AI pipelines — with a strong focus on reliability and code quality. Available for freelance projects and consulting missions.

EXPERIENCE

AI & Data Intern

04/2026 – 09/2026

UTBM | Belfort, France

- Digital twin & architecture: designed and deployed a distributed microservices architecture in Python/Docker for an IoT digital twin, enabling real-time data collection, InfluxDB storage, and ML-based analysis for energy optimization of the Rotonde research building.
- Agentic AI & machine learning: developed a multi-agent system integrating ML models for anomaly detection (TensorFlow, Scikit-Learn), causal analysis, and proactive energy optimization.
- Data engineering & IoT: built an automated IoT data pipeline and data lake for ingesting, normalizing, and exploiting heterogeneous data feeding the anomaly detection models.

Software Engineering Intern

04/2025 – 09/2025

Koust | Brest, France

- Full-stack development: built and improved features on a business management web application (Oracle APEX, PL/SQL).
- Data & API: advanced SQL query optimization (–40% response time), improving the reliability of client reports and overall application performance.
- Project management: direct client interaction to analyze requirements and design tailored solutions.

PROJECTS

LedgerCore — FastAPI, PostgreSQL, async SQLAlchemy, Celery, Redis

REST API for invoice and quote management for freelancers and SMEs. Hexagonal architecture, finite-state machine for document lifecycle, gap-free sequential numbering, automated PDF generation and email delivery. 340 tests, 80%+ code coverage.

Lookout — FastAPI, TimescaleDB, Next.js 15, Docker, WebSocket

Self-hosted infrastructure monitoring platform. Real-time anomaly detection via an anti-flapping state machine, remote agents for system metrics collection, live dashboard, and graceful shutdown handling in production.

Anomacheck — TensorFlow, OpenCV, FastAPI, Docker

Computer vision pipeline for real-time industrial anomaly detection. CNN model achieving 85% accuracy, exposed via REST API and deployed in a container. Architecture designed for production integration.

EDUCATION

ISEN Yncréa Ouest

2023 – 2026

Engineering degree in software development — Brest, France

Institut Maristes Post-Bac

2020 – 2022

Preparatory program for top engineering schools — Dakar, Senegal

SKILLS

Languages : Python, Java, Kotlin, C, JavaScript/TypeScript, PHP.

Databases : PostgreSQL, MySQL, Oracle, InfluxDB.

AI & Data : TensorFlow, PyTorch, Scikit-Learn, SQL, PL/SQL.

Frameworks & Tools : FastAPI, Next.js, Django, Git, Docker, Jenkins, Linux.

Spoken Languages : English (B2), Spanish (B1), Chinese (A1), French (Native).