

MOUHAMADOU MADENIYOU SALL

Software Engineer | Artificial Intelligence & Data

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PROFILE

Software engineer specialising in Artificial Intelligence & Data (IADB) at École Supérieure Polytechnique in Dakar. Ships production systems for clients in France, Madagascar and Senegal: decision platforms and machine-learning models, web and mobile applications, application security and containerised infrastructure. Twice a technical team lead. Autonomous, rigorous, professionally fluent in English.

TECHNICAL SKILLS

Languages : Python, TypeScript, JavaScript, Java, Dart, Kotlin, C, PHP, SQL, PL/SQL, Bash, PowerShell

Backend : FastAPI, Flask, Spring Boot, Node.js/Express, Laravel, REST, SSE, JWT, SQLAlchemy, Alembic, Pydantic

Frontend : Next.js, React 18, Angular, Svelte, TypeScript, Tailwind CSS, Material UI, Three.js, GSAP

Mobile : React Native, Expo, Flutter, Android SDK, Kotlin, dart:ffi, biometrics, push notifications

AI & data : Scikit-learn, Pandas, NumPy, LSTM, Prophet, Random Forest, XGBoost, Isolation Forest, kriging, OpenCV, Gemini API, FFT

Databases : PostgreSQL/PostGIS, MySQL, Oracle PL/SQL, InfluxDB, MongoDB, Redis, Firebase, Supabase, dimensional modelling

Security : PKI X.509, Keycloak, OIDC/OAuth2, JWT RS256, TEE, MFA/TOTP, RBAC, mTLS, Kerberos, LDAP, RADIUS

Cloud & DevOps : Docker, Docker Compose, Nginx, Cloudflare, Terraform, Linux, CI/CD, GitHub Actions, GitLab CI, AWS S3, Spark

Methods : Microservices, clean architecture, SOLID, GoF design patterns, UML, business intelligence, testing, code review

PROFESSIONAL EXPERIENCE

E-commerce client, France (through E-TASKFORCE LTD) — Technical audit & security engagement — freelance *Jun – Sep 2026*

- ▶ Audited a live 3D product configurator and traced a list of defects back to two structural root causes.
- ▶ Secured the online payment chain, trade discounts and shipping costs; rotated secrets and restricted access to third-party APIs.
- ▶ Designed and delivered a centralised document store with indexing, a search engine and reliable numbering. 9 functional tests passed out of 9.

GasyMove / TucTuc (Madagascar) — Mobile & web developer — freelance *2026*

- ▶ Built a dual-role Flutter app for riders and drivers with Google Maps and mobile-money payments (MVola, Orange Money, Airtel Money).
- ▶ Delivered two Next.js dashboards: administration (KPIs, KYC queue, transactions) and a restaurant board driven by live Firebase orders.

Mon Associé, Vitabull, AzulStaff (France) — Full-stack & mobile developer — freelance *2026*

- ▶ Mon Associé: Next.js 16 PWA backed by a Laravel 12 API plus a Flutter app, including a gap audit between specification and existing build.
- ▶ Vitabull: native iOS and Android app in Flutter, Firebase Cloud Messaging push notifications, Stripe payments.
- ▶ AzulStaff: real-time Supabase dashboard with a KYC review queue and three layers of server-side guards.

StackFood & MPS SARR (Senegal) — Full-stack & mobile developer — freelance *2026*

- ▶ StackFood: ordering and delivery platform across four applications — customer, restaurant and courier apps in Flutter, with a Laravel API and back-office.
- ▶ MPS SARR: internal suite in three services — Angular frontend, Spring Boot backend and a read-only analytics service feeding a decision dashboard.

Engy Partners — Mobile developer — internship *Jul – Oct 2025*

- ▶ Built TerangaID, a mobile digital-identity wallet in React Native, shipped on Android and iOS.
- ▶ Implemented OpenID Connect through Keycloak (Authorization Code + PKCE), X.509 certificate handling and private-key isolation inside the Trusted Execution Environment via native Kotlin and Swift modules.

TGI — Tout en Génie Informatique, Dakar — Software developer — internship *May – Jul 2024*

- ▶ Designed and built application modules on a live web product, within a team of developers.

- Wrote and optimised SQL queries, implemented business logic and JSON exchanges between components.

SELECTED PROJECTS

NĚBB — Team lead (6 students) — IoT + AI air-pollution monitoring platform 2026

- Led a cross-disciplinary team of six and owned the AI models and backend architecture.
- Trained and shipped 4 production models: PM2.5 forecasting with LSTM and Prophet at a 95% confidence band, sensor calibration with Random Forest, anomaly detection with Isolation Forest, and spatial interpolation by kriging.
- Architected MQTT ingestion, PostgreSQL/PostGIS, InfluxDB and Redis persistence, a FastAPI service (REST + SSE) and production security: RS256 JWTs, six-role RBAC, TOTP MFA, mTLS.

KÀLAMA — Lead full-stack developer — education platform 2025 – 2026

- Architected a course marketplace as microservices: async FastAPI, PostgreSQL, Docker Compose, an Nginx gateway and Cloudflare in front.
- Integrated BigBlueButton and Jitsi Meet live classes, and mobile-money payments with asynchronous confirmation handling.

SénSanté Pro — Microservice architecture — healthcare platform 2026

- Designed a Spring Boot microservice platform (authentication, patients, consultations) behind an Nginx gateway, with an AI consultation assistant.
- Set up infrastructure as code with Terraform and a GitLab CI/CD pipeline.

BoviBot — Team lead (3 students) — cattle herd management 2026

- Implemented time-based business logic in PL/SQL: stored procedures, alert triggers and scheduled events, so that reminders exist independently of the application.
- Built the Flask API and integrated an AI chat assistant for farmers.

SignaVox & face recognition — Signal processing and computer vision 2024 – 2026

- SignaVox: a complete chain in Python and Flask — real-time capture, VAD, FFT analysis, frequency filtering and IFFT reconstruction.
- Real-time face recognition in Python (OpenCV, face_recognition) and Java (JavaCV), with guided multi-pose enrolment and dynamic retraining.

Ensemble learning — malware detection — Machine learning & data mining, ESP Dakar 2026

- Implemented and compared bagging, boosting and stacking over a dataset of 137,444 Windows executables: hyper-parameter tuning, cross-validation, outlier handling.

EDUCATION

École Supérieure Polytechnique de Dakar — Engineering Degree — Computer Engineering, AI & Data track 2024 – 2027

- Machine learning, data mining, deep learning, continuous optimisation, big data, NoSQL, business intelligence.
- Distributed systems, parallel programming, cloud computing, virtualisation, data and infrastructure security.

École Supérieure Polytechnique de Dakar — Technical Diploma — Computer Engineering 2022 – 2024

- GoF design patterns, Java OOP, software engineering, advanced data structures, Android mobile development, web technologies.

Lycée d'Excellence Cheikh Hamidou Kane, Thiès — Scientific Baccalauréat, S1 stream — with distinction 2022

LANGUAGES AND COMMUNITY WORK

French: native. English: professional level (B2-C1), technical documentation and international collaboration. Spanish: basic.

Member of ISOC Senegal (Internet Society) and of the ESP Dakar IT committee. Board member of Sadaqa Jariya, a charitable association (2024 – present). ESP Dakar Humanitarian Club (2024 – 2025). UNESCO Club (2017 – 2019).