Fitahiantsoa Finaritra **RAZAKANARY**



AI & Automation Project Lead · Founder of ORIA · Practitioner-researcher in federated learning

MSc Big Data & AI (ESTIA) in progress

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PROFILE

AI & Automation Project Lead for seven companies of a group, and founder and software architect of ORIA, I turn business problems into measurable, secure and well-governed AI solutions — data pipelines, generative AI and RAG, APIs and platforms. Alongside an MSc in Big Data & AI (ESTIA), I conduct applied research on federated learning across heterogeneous companies, applied to probabilistic forecasting of customer collections.

PROFESSIONAL EXPERIENCE

AI & Automation Project Lead — Compagnie MADECASSE

Since October 2026

Scope: PRICE · The Land · EMIP · Motostore · CASA · SK Pharma · Madecasse

Leading artificial intelligence and data science projects for seven companies with varied activities, working directly with executive management: some integrations are carried out company by company, others are shared across the group.

Responsibilities

- Defining and steering the group's AI, data and automation roadmap.
- Analysing business problems and translating them into modelling, experimentation and evaluation objectives.
- Designing and developing solutions: data preparation, choice of approaches, integration and continuous improvement.
- Defining shared architecture, security and data governance principles for the group's companies.

Ongoing AI & data projects

- **Federated forecasting of financial time series**: a collaborative training set-up for the cash-flow forecasting of the group's companies. Models are trained locally and only their parameters are aggregated into a shared model, without centralising financial data, while accounting for heterogeneous (non-IID) distributions and each company's own temporal dynamics.
- **Shared AI architecture**: design of an access gateway to AI models and services (API Gateway), with access control, request traceability and usage monitoring across the group.
- **Document analysis for recruitment** (several group companies): design of information-extraction and document-analysis processing to structure application data and support its assessment.

Areas: federated learning, financial time series, data science, AI architecture, data governance, backend and API development

Founder & Software and AI Architect — ORIA Madagascar

Since 2025

Digital transformation & artificial intelligence · Antananarivo

Main activity until September 2026; since October 2026, targeted engagements carried out alongside my current role.

Founder and software architect of ORIA Madagascar, a company specialising in digital solutions, data exploitation and the integration of artificial intelligence to support organisations in their transformation.

Key responsibilities

- Defining the software architecture of applications and platforms.

- Designing and developing AI solutions: LLMs, generative AI, intelligent assistants, process automation.
- Building modern data architectures: collection, processing, analysis and visualisation.
- Developing web applications and scalable SaaS platforms; integrating APIs, cloud services and automation tools.
- Steering technology choices and enforcing good development practices.
- Working with clients to analyse their needs and design high-value solutions.

Engagements and achievements

- **Client engagement (confidential) — generative AI on business data**: contributed to a Python platform for the intelligent use of business data: multi-source ETL pipelines, a RAG pipeline (Hugging Face embeddings, FAISS vector index), integration and adaptation of Mistral 7B, FastAPI backend services and REST APIs, PostgreSQL storage, evaluation and optimisation of the pipelines.
- **Same engagement — multi-region service continuity**: an automated system monitoring domain-name availability from several regions (checks every 10 minutes), detecting regional outages and switching automatically to fallback domains, with centralised tracking for incident analysis.
- **ORIA platform and AI Lab**: architecture of a statically generated bilingual web platform (technical SEO, CSP/HSTS security, zero recurring cost) and of three AI demonstrators running entirely in the browser: WebAssembly OCR for invoice extraction, a BM25 search engine for sourced answers over documents, weak-signal detection.

Tech stack: Python, FastAPI, Django, React, JavaScript, PostgreSQL, Docker, Git, REST APIs, LLMs, generative AI, RAG, Hugging Face, FAISS, PyTorch, Mistral 7B, machine learning, data analytics, Power BI

Python Backend Developer — Oceantrade Madagascar

August 2025 – November 2025

Bachelor's final-year internship

Thesis topic: "Advanced monitoring and intelligent detection of fraud and anomalies in an electric vehicle charging station system"

Main achievements

- Developed backend services with Python/FastAPI and ETL pipelines to collect and transform data from the EV charging stations.
- Orchestrated processing with Apache Airflow and handled inter-service messaging with RabbitMQ.
- Statistical analysis of OCPP data to characterise how the stations operate and are used.
- Used Isolation Forest to detect anomalies and atypical behaviour in operational data.
- Used Random Forest to anticipate failures and guide maintenance interventions.
- Contributed to testing, debugging and deploying the platform.

Areas: Backend · Data engineering · Machine learning · Time series · Distributed architecture

ONGOING RESEARCH

FedCash — Cross-Silo Federated Learning under Data Heterogeneity: Aggregation Weighting and Local Adaptation

Question: when does federated learning across heterogeneous companies improve collection forecasts?

Status: research in progress — pre-registered protocol, no results published at this stage · finaritra.oria.mg/en/research/

EDUCATION

Master 2 — MSc Big Data & Artificial Intelligence

2026–2027

ESTIA — taught at IT University, Madagascar — In progress

Machine learning and deep learning, distributed Big Data management, NoSQL and data lakes, relational and object SQL, cloud programming.

Executive Data Manager — 2026–2027

INSCAE — professional programme — In progress

Data management, administration, modelling and governance.

Certificate in Automation and Artificial Intelligence Integration — 2026

University of Antananarivo — Obtained

Master 1 in Computer Science — 2025–2026

IT University, Madagascar — Completed

Machine learning, artificial intelligence, operations research, distributed programming and web services, enterprise databases.

Bachelor's degree in Software Development — 2022–2025

IT University, Madagascar — Awarded in 2025

Programming and algorithms, software architecture, databases, vector and matrix calculus, probability and statistics, optimisation.

Scientific baccalaureate — series C (maths & physics) — 2022

Obtained

SKILLS

Data science & machine learning

Exploratory and statistical analysis · Data preparation · Feature engineering · Dimensionality reduction (PCA) · Supervised and unsupervised learning · Model evaluation

Tools: Pandas, NumPy, Scikit-learn, PyTorch, Matplotlib, Seaborn

Forecasting & federated learning

Time series · Probabilistic forecasting · Forecast calibration · Federated learning on heterogeneous (non-IID) data — being put into practice

Generative AI

LLMs · RAG · Fine-tuning · AI agents · AI API integration

Tools: LangChain, Hugging Face Transformers, FAISS

Data engineering & automation

ETL/ELT pipelines · Workflow orchestration · Process automation

Tools: Apache Airflow, Kafka, RabbitMQ

Development & architecture

REST APIs · Microservices · API Gateway · SOLID principles

Tools: Python, FastAPI, Django, Java, Spring Boot, Hibernate, Jakarta EE

Data & governance

Data governance · Personal data protection (Malagasy Law No. 2014-038)

Tools: PostgreSQL, Oracle Database

LANGUAGES

Malagasy: native · **French**: DELF B2 (June 2025) · **English**: working proficiency

INTERESTS

Music (piano, guitar, saxophone), swimming