Mouad Elbaz

Junior AI & Machine Learning Engineer | Python, PyTorch, LLMs

Agadir, Morocco | +212 751 81 12 01 | elbaz.ouad1249@gmail.com | github.com/moad-cod | Portfolio

Education

Universite Sultan Moulay Slimane 2026
Bachelor in Big Data *Morocco*

ISTA Agadir 2023 – 2025
Technicien Specialise en Reseaux et Systemes *Agadir, Morocco*

Lycee Qualifiant 2022 – 2023
Baccalaureat Sciences Physiques *Morocco*

Professional Experience

Data Engineering & Machine Learning Intern (PFE) Apr. 2026 – Jul. 2026
Prefecture d'Agadir Ida-Outanane *Agadir, Morocco*

- Trained **XGBoost** models for IT ticket classification and **Isolation Forest** for hardware anomaly detection, integrating inference into **FastAPI** services.
- Developed a multilingual **RAG system** combining BM25, dense vector retrieval, **Reciprocal Rank Fusion**, Cross-Encoder re-ranking, and Qdrant.
- Designed an asynchronous **ELT pipeline** processing **200,000+ records** from GLPI ITSM, OCS Inventory, and security logs for downstream analytics.
- Orchestrated data workflows using **Apache Airflow** and dbt; integrated ML services with a **Next.js** KPI dashboard.

Developer Intern Apr. 2025 – Jun. 2025
Prefecture d'Agadir Ida-Outanane *Agadir, Morocco*

- Developed a secure enterprise attendance system with **RBAC**, authentication, session management, IP compliance checks, and structured audit logging.

Projects

Qwen MedQuAD – LLM Fine-Tuning Research | *Qwen3, QLoRA, PyTorch, Python* GitHub

- Built a leakage-audited MedQuAD dataset pipeline with **16,357 cleaned QA records** and **14,344 normalized question groups**, using group-safe data splitting.
- Fine-tuned **Qwen3-4B** using **4-bit QLoRA** and parameter-efficient training for medical question answering.
- Designed a controlled **2×2 Base/RAG/Fine-tuned/ Fine-tuned+RAG** evaluation protocol to study grounding, uncertainty, robustness, and selective answering.

PlantGuard AI – Deep Learning Classification | *PyTorch, EfficientNet-B3, ResNet, Docker* GitHub

- Benchmarked **CNN, ResNet, and EfficientNet-B3** across 38 plant disease categories using **70,000+ images**, achieving approximately **99.7% F1-score**.
- Integrated **MSP and GOAD** out-of-distribution detection with supervised classification and deployed the application using **Docker and Streamlit**.

CCSR – RAG & AI Research Platform | *FastAPI, Qdrant, Airflow, Celery, Docker* GitHub

- Developed a local-first **AI research platform** supporting reproducible RAG experiments, retrieval tracing, and evaluation workflows.
- Implemented **hybrid dense + BM25 sparse retrieval**, configurable chunking, and deterministic vector indexing with Qdrant and PostgreSQL metadata.
- Integrated **FastAPI, Celery, Apache Airflow, and Redis** for asynchronous ingestion, retrieval services, and processing events.

Technical Skills

Programming: Python, SQL, Java
Machine Learning: Scikit-learn, XGBoost, Isolation Forest, Classification, Anomaly Detection, Pandas, NumPy
Deep Learning: PyTorch, CNN, ResNet, EfficientNet, Transfer Learning
LLMs & NLP: RAG, QLoRA, LLM Fine-Tuning, Qwen3, BM25, Hybrid Retrieval, Cross-Encoder Re-ranking
AI Engineering & Deployment: FastAPI, Qdrant, FAISS, Docker, REST APIs, Streamlit, Celery
Data & Infrastructure: PostgreSQL, MySQL, Redis, MinIO, Apache Airflow, dbt, Git, Linux, Oracle Cloud Infrastructure (OCI)

Certifications & Languages

Certifications: Machine Learning Specialization (DeepLearning.AI), Introduction to Data Warehousing (365 Data Science), Network Security (Cisco), Microsoft Learn Developer & Cybersecurity Pathways
Languages: Arabic – Native | French – Intermediate | English – Advanced