

Akram Rahali

5th-Year Artificial Intelligence & Data Science Student
National Higher School of Computer Science (ESI-SBA), Algeria

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👤 PROFILE

Fifth-year Artificial Intelligence and Data Science student at [ESI-SBA](#), with academic training in machine learning, deep learning, natural language processing, and large-scale data processing, and practical experience in forecasting, computer vision, and graph learning. Experienced in carrying a model through to a working application.

🎓 EDUCATION

National Higher School of Computer Science ([École supérieure en informatique de Sidi Bel Abbès](#)), Algeria — Engineering Program Fifth year

- **Artificial Intelligence & Data Science:** coursework spanning machine learning, deep learning, natural language processing, retrieval-augmented generation and large language models, Apache Spark (MLlib, Spark SQL, GraphX), relational and NoSQL databases, numerical analysis, and high-performance parallel computing.

Baccalaureate : 16.92/20

June 2021

💻 TECHNICAL SKILLS

- **Programming:** Python (NumPy, pandas), C, R, JavaScript, TypeScript, Kotlin, SQL
- **AI & Data:** PyTorch, PyTorch Geometric, scikit-learn, DINOv2, YOLO, supervised and unsupervised learning, deep learning
- **Language & Retrieval:** natural language processing, retrieval-augmented generation, large language models, sentence-transformers
- **Data Processing:** Apache Spark (MLlib, Spark SQL, GraphX), numerical analysis
- **Databases:** PostgreSQL, Oracle Database, MongoDB, Cassandra, Neo4j
- **Software:** FastAPI, React, Node.js, Express, NestJS, Docker, Gradio, TensorFlow Lite

🔬 RESEARCH

AgriGraph — Dairy Sustainability Forecasting

May 2026 – June 2026

- Built a county-scale sustainability platform for Ireland's dairy herds, as a direct implementation of *Spatio-Temporal Graph Neural Networks for Dairy Farm Sustainability Forecasting and Counterfactual Policy Analysis*.
- Augmented ICBF herd records with a variational autoencoder, scored them into four operational pillars, and forecast county trajectories with a spatio-temporal graph neural network, including counterfactual policy levers.
- Delivered the model behind a FastAPI service and a React map, with results stored in PostgreSQL.

Drone Swarm Patterns

March 2026 – June 2026

- Turned PyFlyt swarm episodes into communication graphs and trained graph neural networks for formation assignment and local setpoint prediction.
- Compared centralized and decentralized flight in a Three.js viewer served by FastAPI.

TECHNICAL PROJECTS

Algerian Flower — Botanical Relevés

June 2026 – Present

- Embedded field photos of vegetation plots with a fine-tuned DINOv2 vision transformer and estimated species abundance, dominance, and Braun-Blanquet cover.
- Exposed the model through a FastAPI and React application backed by PostgreSQL.

ARWood-tech — On-Device Timber Estimation

May 2026 – June 2026

- Built an Android application that segments log ends with YOLOv8, calibrates scale from two reference points, and computes stacked wood volume on device.
- Implemented the interface in Kotlin and Jetpack Compose, with the detector exported to TensorFlow Lite.

Breast Cancer Histopathology

December 2025

- Classified histopathology patches with CTransPath embeddings and classical and semi-supervised models, then aggregated the patch votes into a slide-level tissue label.

Research Assistant

April 2026 – May 2026

- Built an agentic literature assistant that searches arXiv, ingests papers into a local vector store, and answers from session-scoped retrieval with a cross-encoder reranker.

PROFESSIONAL EXPERIENCE

Algérie Télécom — DOT Khenchela — Software Intern

September 2025

- Designed and implemented a full-stack telecom billing platform on a local client-server architecture, using Node.js, Express, JavaScript, HTML/CSS, and EJS, with a MongoDB database.
- Modeled the collections `comptes`, `compte_corporate`, `corporate_facture`, `conso_client`, and `cycle_facture`, and enforced role-based access for administrative, service, corporate, and client users.
- Delivered residential and enterprise subscriber management, bimonthly consumption and subscription-fee calculation, payment and debt tracking, and dynamic PDF invoices.