

Abdelrrahman Moubane

AI ENGINEER | COMPUTER VISION, RAG & MULTIMODAL SYSTEMS

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PROFILE

AI engineer and independent researcher specializing in computer vision, multimodal retrieval, and RAG. Sole author of the FOTBCD benchmark, with experience in dataset design, model training and evaluation, vector search, and full-stack AI products.

EXPERIENCE

Research Fellow

Sep 2024 - Dec 2025

University of Turin

- Conducted applied research across legal-domain retrieval, open-weight model evaluation, and remote-sensing applications.
- Built reproducible data and evaluation pipelines plus interactive prototypes for source-grounded search and model analysis.

Independent AI Researcher

Jan 2026 - Present

FOTBCD - computer vision, multimodal learning, and geospatial search

- Sole-authored the FOTBCD paper and released a 223,675-pair geospatial dataset across 28 French departments, including a 27,871-pair binary benchmark with geographically held-out evaluation.
- Developed and released MBCTD, a three-label building-change segmentation model; reached 0.9073 F1 on FOTBCD and 0.7909 on LEVIR-CD+, then documented a zero-shot stress test on 2025 LA wildfire imagery.
- Built FOTBCD-CC: distilled 29,447 teacher captions into Qwen3-VL-8B, improving held-out change accuracy from 62.35% to 89.60% against teacher references, then generated 321,200 captions for 223,675 pairs.
- Trained DINOv3-Qwen temporal retrieval and indexed 420,175 unseen Rhone pairs in Milvus; built text, point, and multi-example search with FastAPI, Solara, and inspectable map results.

SELECTED PRODUCTS

AI Legal Research Platform

2024

Source-grounded RAG for Italian legal content

- Built source-specific vector retrieval, article-level context reconstruction, cited AI answers, streamed FastAPI workflows, and a React/TypeScript interface using OpenAI, Milvus, MongoDB, Auth0, and Docker.

EduGen

2024

Full-stack AI study platform

- Built cited chat, hybrid lesson search, document-assisted learning, and quiz generation with FastAPI, Next.js, BGE-M3, Milvus, MongoDB, Auth0, and server-sent events.

SKILLS

AI / ML	Python, PyTorch, segmentation, vision-language fine-tuning, contrastive learning, evaluation, dataset design
Retrieval	Milvus / Zilliz, embeddings, semantic search, multimodal retrieval, RAG, source-grounded generation
Systems	FastAPI, vLLM, Docker, MongoDB, Git, batch inference, reproducible data pipelines
Geo / UI	Rasterio, Solara, ipyleaflet, TypeScript, React, interactive technical prototypes

EDUCATION

BSc, Computer Science

2020 - 2024

University of Turin - thesis project: AI-assisted legal research