

# Mounaim BELKHOUMALI

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Graduate of *École polytechnique* with a specialization in Artificial Intelligence and an MSc in Data Science from Sorbonne University, with 3 years of experience in Generative AI, LLMs, RAG, Machine Learning, Deep Learning and Computer Vision. Designed and shipped production AI tools for large groups (Publicis Group), mid-size companies and high-growth start-ups. Cross-functional skills across backend, DevOps and frontend to deliver end-to-end AI products.

## PROFESSIONAL EXPERIENCE

- Dec 2025 – Apr 2026  
Paris
- MapBrain (Freelance) · AI Engineer / Full-Stack · 5 months**
- End-to-end design and development of **MapBrain**, an AI-powered educational SaaS platform that turns any content (PDF, YouTube video, audio, slides, Word documents) into a personalized interactive learning path.
- **Multi-format pedagogical content generation** from a single source document: structured summaries, interactive mindmaps, self-assessment quizzes, revision flashcards and automatically generated audio podcasts — orchestrated via LangChain / LangGraph with Azure OpenAI (GPT-4o) and multi-agent workflows.
  - **Real-time conversational voice tutor** letting learners discuss their course in voice: Whisper (STT) → LLM → TTS pipeline over WebSocket (Socket.IO), course-context management and low-latency bidirectional streaming.
  - **Multi-modal ingestion pipeline**: PDF extraction and chunking, audio transcription (Whisper), YouTube transcript retrieval, slide parsing; vectorization and storage in **Milvus** for contextual RAG across the user's full content library.
  - **End-to-end Azure cloud architecture**: containerized deployment on **AKS** (Azure Kubernetes Service), Azure OpenAI for models, Redis for caching and sessions, Flask / FastAPI APIs, GitHub Actions CI/CD, monitoring and autoscaling.
  - Close collaboration with the product team and frontend to iterate quickly on features and ensure the pedagogical quality of generated content.
- Tools*: Python, Flask, FastAPI, LangChain, LangGraph, Azure OpenAI (GPT-4o, Whisper, TTS), AKS, Milvus, Redis, Socket.IO, Docker, Pydantic, SQLAlchemy, PostgreSQL, GitHub Actions.
- Dec 2024 – Nov 2025  
USA (Remote)
- Zaivio (Freelance) · Generative AI Engineer · 1 year**
- Contributed to the technical development of 3 generative AI products within a distributed team for US clients.
- **Real-time e-reputation monitoring platform** analyzing the web, social networks and forums to assess an entity's online image; automated email reports including sentiment analysis and concrete actionable recommendations to improve e-reputation. *Tools*: Python, LangChain, OpenAI, Tavily API, Selenium, Docker, Heroku, SMTP/Email APIs, prompt engineering.
  - **AI assistant for complex medical documents** using autonomous agents and sourced RAG to deliver precise answers to healthcare professionals, accelerating document analysis and clinical decision-making. *Tools*: LangGraph, LangChain, OpenAI, FastAPI, Next.js.
  - **Editorial content automation platform**: trending-topic detection, article + visual generation (DALL-E), automatic publishing to LinkedIn, X and WordPress via their APIs, delivering massive time savings for editors. *Tools*: OpenAI API, DALL-E, FastAPI, Selenium, Docker, LinkedIn/X/WordPress APIs.
- Jun 2024  
Paris
- Publicis Sapien — Data Science / AI Engineering Consultant · 3 months**
- Designed a generative AI tool for the Publicis Group to evaluate the ethical compliance of ads before broadcast. Added multimodal capabilities (images, videos, PDFs) to the existing tool; used OpenAI LLMs (GPT-4, GPT-4o) and open-source LLMs combined with advanced prompt engineering to analyze and rate ads. **Reached 90% classification accuracy.** *Tools*: Python, LLMs (OpenAI, GPT-4, GPT-4o), LangChain, Web Scraping (Selenium), Git.
- Apr 2024  
Paris
- EPSILON France — Data Scientist / AI Engineer · 3 months**
- Built a RAG system with LangChain to automatically extract evaluation criteria from RFP PDFs, optimized precision through advanced techniques (HyDE, RAG Fusion), implemented RAGAS metrics to evaluate analysis quality and reliability, and benchmarked parameters (chunking, top-k, embeddings) to select the best configuration. **Cut manual workload by 50%.** *Tools*: Python, LangChain, RAG Systems, Prompt Engineering, Hugging Face, open-source LLMs, Azure OpenAI, Git.
- Feb 2023  
6 months
- Biopharm — Machine Learning Engineer**
- Built an end-to-end ML solution to address the spare-parts procurement problem: business scoping with stakeholders, state-of-the-art review (suitable ML / time-series models), model testing and evaluation, model selection and deployment via a Tkinter UI tailored to business needs. Solution deployed and used by the teams. *Tools*: Python, Machine Learning, Deep Learning, Scikit-Learn, TensorFlow, Pandas, Tkinter.
- Mar 2022  
6 months
- Jumia — Machine Learning Engineer**
- Developed a seller churn prediction solution for Jumia's marketplace: exploratory analysis (PCA, clustering), prediction model (Python, Scikit-Learn), automated pipeline to collect and analyze seller data in real time, interactive Streamlit dashboard to visualize predictions and trigger retention actions. **Reached 80% accuracy.** *Tools*: Python, Deep Learning, OpenCV, TensorFlow, YOLOv7, Scikit-Learn, Streamlit.

## EDUCATION

<b>Sorbonne University</b> — MSc Data Science	2023 – 2024
<b>École polytechnique</b> — MEng + MSc in Artificial Intelligence	2018 – 2023

## SKILLS

**AI / LLMs**: Python, OpenAI API (GPT-4, GPT-4o, GPT-4.1), Azure OpenAI, Whisper, TTS, Realtime API, LangChain, LangGraph, RAG (HyDE, RAG Fusion, BM25, RAGAS), prompt engineering, embeddings, open-source LLMs, Hugging Face.

**Machine Learning & Vision**: Scikit-Learn, TensorFlow, Deep Learning, OpenCV, YOLOv7, time series, PCA, clustering.

**Backend / Data**: FastAPI, Flask, Flask-SocketIO, SQLAlchemy 2.0 async, PostgreSQL, MySQL, Redis, Milvus/Zilliz, Spark, Hadoop, SQL, NoSQL, REST, WebSocket, Pydantic, Alembic, Pytest.

**DevOps / Cloud / Frontend**: Docker, Kubernetes, GCP, Azure, OVH, Render, Heroku, Vercel, Gunicorn, Git/GitHub, CI/CD · React 19, TypeScript, Tailwind v4, shadcn/ui, Vite, Next.js, Streamlit.

**Certifications & languages**: Dataiku · French (native) · English (professional — 15 months on a US engagement).