

# Mohamed Dhia Betis

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## Professional Summary

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AI/ML engineering student focused on NLP, LLM, and agentic AI. Passionate about building efficient, reliable, and explainable AI systems for real-world applications. Available Summer 2026 (May–August).

## Experience

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### AI Intern, Huawei – Tunis, Tunisia

Jul 2025 – Aug 2025

- Designed and implemented a multi-agent NL2SQL workflow using LangGraph: planner, retriever (ChromaDB), SQL synthesizer, critic, explainer, and orchestrator agents. Explored evaluation methods such as LLM-as-a-judge.
- Transformed complex large-scale telecom data (Excel dictionaries) into structured JSON and indexed it in ChromaDB, enabling semantic and filtered retrieval for accurate agent reasoning.

### Data Science Intern, Smart Conseil – Ariana, Tunisia

Jun 2024 – Aug 2024

- Developed a sexual content detector and toxicity classifiers to improve online safety on social media platforms.
- Designed French text age detection models using SVM, LSTM, and BERT, with performance benchmarking.
- Built a multimodal harmful meme detector combining OCR-extracted text, toxicity analysis, and image-based signals.

## Education

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### Higher School of Statistics and Information Analysis (ESSAI)

Engineering Degree (Statistics and Information Analysis)

Sep 2023 – Present

Relevant Coursework: Probability and Statistical Learning, Optimization, Time Series, Algorithms, Databases, Linear Models, Reinforcement Learning, Finance.

### Preparatory Institute for Engineering Studies of Nabeul

Intensive Mathematics and Physics (National Engineering Track)

Sep 2021 – Jun 2023

## Technical Skills

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- NLP and LLMs: advanced language models, prompt engineering, RAG, summarization, knowledge extraction
  - Model adaptation and optimization: fine-tuning / PEFT (LoRA), quantization, evaluation, robustness
  - Agentic systems and RL: LLM-driven multi-agent orchestration, policy generation, robust RL in dynamic simulations
- Primary Tools: Python, R, Java, PyTorch, Hugging Face, LangChain, LangGraph, ChromaDB, Pinecone, FAISS, FastAPI, Docker.
- Additional Skills: SQL, Django, Neo4j, data preprocessing, pipeline design.

## Projects

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### AI Resume Screening Platform (GitHub)

- Hybrid candidate search: semantic vector retrieval (Pinecone) + graph skill relationships (Neo4j).
- Automated PDF/Gmail ingestion with OCR fallback; structured skill/entity extraction and asynchronous pipelines (Celery + Redis).

### LLM-Powered Network Optimization Advisor (GitHub)

- Fine-tuned LLaMA-3-8B (4-bit LoRA) with sequence packing, Flash Attention, and gradient checkpointing, achieving 0.48 ROUGE on domain-specific tasks under constrained GPU resources.
- Deployed modular FastAPI inference service in Docker, supporting scalable and efficient LLM-based recommendations.

### YouTube Video Summarizer and Chat (GitHub)

- Pipeline: Whisper transcription -> hierarchical text summarization -> semantic chunk indexing (FAISS) for Q&A.
- Streamlit interface with answer referencing of source segments to reduce unsupported responses.

## Leadership and Activities

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### Vice Chairman, ESSAI Machine Learning Club

May 2024 – Present

- Organized 10+ applied AI/ML workshops (NLP, LLM, Reinforcement Learning) across multiple Tunisian engineering schools (300+ cumulative attendees).
- Mentored student teams on reproducible experimentation and model evaluation practices.

### Lung Cancer Detection Initiative (Member), Enactus ESSAI

Oct 2024 – May 2025

- Assisted in CT scan image preprocessing and early model experimentation for classification.

## Languages

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Arabic (Native) — English (Fluent) — French (DELFI B2)