

Malek Ahmed

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SUMMARY

Computer Science & Statistics student at Ain Shams University with a genuine interest in building real AI systems and data-driven solutions. I enjoy working across the full stack — from designing RAG pipelines and NLP backends to building interfaces that bring AI products to life. I have hands-on experience in machine learning, applied NLP, and full-stack development, and I approach every project with both technical depth and a product-focused mindset. Always motivated to learn fast, tackle hard problems, and ship things that actually work.

PROJECTS

- NexoBot** | *React, FastAPI, PostgreSQL, Docker, Nginx, llama.cpp, JWT, Prometheus, Grafana* [GitHub](#)
- Led frontend engineering for a cybersecurity AI assistant powered by local LLMs (llama.cpp / GGUF models) with real-time token delivery via SSE streaming — DEPI graduation project.
 - Built complete React/Vite UI: authentication flows, JWT session management, and streaming API integration with a FastAPI backend connected to PostgreSQL.
 - Containerized the full stack with Docker; configured Nginx as reverse proxy and integrated Prometheus + Grafana for production-level system monitoring.
- Campus AI** | *Python, FastAPI, RAG, Sentence Transformers, ChromaDB, BM25, Flutter* | *Grade: A–* [GitHub](#)
- Built a bilingual (Arabic/English) RAG assistant for Ain Shams University with a Python/FastAPI backend and a Flutter mobile app with 13+ feature modules — university graduation project.
 - Engineered a hybrid retrieval system (BM25 + Sentence Transformers + ChromaDB, RRF fusion), improving accuracy from **54.4%** → **97.0%** across **182 real test cases** (+42.6% gain).
 - Designed an Arabic NLP preprocessing pipeline (diacritic removal, alef normalization, prefix stripping) and deployed on Hugging Face Spaces with SSE streaming and TTL-based multi-turn memory.
- Customer Segmentation** | *Python, Scikit-learn, DBSCAN, PCA, Pandas*
- Applied DBSCAN clustering with hyperparameter tuning; evaluated results using Silhouette Score and reduced dimensionality via PCA for visual analysis.
 - Performed outlier detection and translated cluster profiles into actionable business insights.

TECHNICAL SKILLS

Languages: Python, JavaScript, C++, SQL
AI / ML: RAG, LLMs, NLP, Sentence Transformers, Hybrid Search (BM25 + Vector), Prompt Engineering, DBSCAN, PCA, Scikit-learn, Pandas, NumPy
Backend: FastAPI, REST APIs, SSE, JWT, PostgreSQL, ChromaDB, MySQL
Frontend: React, Vite
DevOps: Docker, Nginx, Git, GitHub, Prometheus, Grafana
Local AI: Ollama, llama.cpp, GGUF models

TRAINING

- Data Science & Generative AI Track — Completed** Nov 2025 – 2026
Digital Egypt Pioneers Initiative (DEPI)
- Completed professional AI track covering ML, deep learning, generative AI, prompt engineering, and statistical analysis; built NexoBot as the graduation project.
- Artificial Intelligence Fundamentals** Jan 2026
IBM SkillsBuild (supported by MCIT Egypt)
- Covered ML, deep learning, and NLP fundamentals with a hands-on capstone project.

EDUCATION

Ain Shams University – Faculty of Science Cairo, Egypt
B.Sc. in Computer Science & Statistics 2022 – Present