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Mohamed Osama
Data Scientist / AI Engineer

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SUMMARY

A passionate and results-driven Data Scientist and AI Engineer with a strong foundation in machine learning, AI, and data analysis. Currently pursuing a Bachelor's degree in Computer Science and Artificial Intelligence at Nile University. Experienced in working with large language models (LLMs), computer vision, and natural language processing (NLP) techniques. Adept at leading technical teams, managing projects, and deploying AI solutions in production environments. Known for a strong problem-solving ability, collaboration skills, and commitment to continuous learning in cutting-edge technologies.

EDUCATION

Bachelor of Computer Science & Artificial Intelligence, Nile University   *Oct 2021 – Jun 2025*
CGPA: 3.6
Relevant Coursework: Artificial Intelligence, Machine Learning, Databases, Software Development, Data Analysis, Mathematics
Student Activities:

- **ITCS School's Representative**, Nile University Students' Union   *Aug 2023 – Mar 2024*
  Addressed student concerns for over 1000 peers and led initiatives to enhance student life.

- **Junior Member**, ICPC NU Community   *Oct 2022 – Present*
  Participated in the Egyptian Collegiate Programming Contest (ECPC).

- **Technical Member**, IEEE NU Student Branch   *Oct 2022 – Oct 2023*
  Organized workshops on AI and machine learning and contributed to engineering projects.

SKILLS

Technical Skills: Python, C/C++, Java, SQL; CUDA, PyTorch, TensorFlow, Keras, Scikit-learn, GANs
Advanced Skills: LLMs, Retrieval-Augmented Generation (RAG), NLP
Soft Skills: Presentation, Team Management, Project Management, Communication
Other: Research, Report Writing, Public Speaking

TECHNICAL EXPERIENCE

LLM Freelancer – Part-Time   Apr 2025 – Present
Digis2, Remote

- Deployed large language models in production using CPU-optimized techniques and GPU acceleration via CUDA.

- Fine-tuned open-source LLMs for tasks such as summarization, classification, and conversational AI.

- Built lightweight, locally deployable pipelines for environments with limited compute resources.

AI Engineer, Team Lead – LLM Team   Aug 2024 – Present
Firrnas, Cairo, Egypt

- Lead the LLM team, managing task delegation, tracking progress, and ensuring project timelines.

- Applied computer vision for object detection and segmentation in steel factory environments.

- Fine-tuned LLMs and implemented Retrieval-Augmented Generation (RAG) for advanced information retrieval.

- Built a digital twin using NVIDIA Omniverse for real-time production monitoring.

DEMI Coding Instructor – Part-Time   Jun 2024 – Oct 2024
iSchool, Instructors Department – Remote, Egypt

- Taught programming fundamentals and AI concepts to young learners.

- Provided support with grading, student queries, and project guidance using Pictoblox.

Data Science Intern   Sep 2023 – Dec 2023
Misr El-Kheir Foundation, Cairo, Egypt

- Conducted data validation, cleaning, and exploratory analysis.

- Visualized statistical trends and supported data-driven decision-making.

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Junior Teaching Assistant   Oct 2022 – Jun 2023
Nile University ITCS School, Giza, Egypt

- Assisted in Discrete Mathematics instruction for over 180 students.

- Led tutoring sessions and supported grading and academic inquiries.

PROJECTS

RAG_Project – github.com/MOsama10/RAG_Project
Technologies: RAG, PyTorch, Hugging Face, FastAPI
Developed a local Retrieval-Augmented Generation system for enterprise-grade QA with schema-aware logic and local deployment using FastAPI.

Katana NLP-to-SQL Platform – github.com/MOsama10/katana-nlp-to-sql
Technologies: FastAPI, PostgreSQL, SQLCoder (GGUF), llama.cpp
Built a fully offline NLP-to-SQL system for Katana telecom analytics. Converts English queries into SQL using domain-aware logic and dynamic schema handling.

Hieroglyphic Translation to English – github.com/MOsama10/Hieroglyphic-translation-to-English
Technologies: Python, Transformers, Vision Models, Hugging Face
Designed a CV-NLP pipeline that detects and translates ancient Egyptian hieroglyphics into English using transformer-based models.

Production to Instruction – github.com/MOsama10/production-to-instruction
Technologies: PyTorch, LLMs, NLP, Prompt Engineering
Transformed raw production logs into human-readable instructions using large language models and prompt engineering for enhanced operational clarity.

Speech-to-Speech Translation System – github.com/MOsama10/Speech-to-Speech
Technologies: XTTS, PyTorch, Whisper, FastAPI, Hugging Face
Built an end-to-end speech-to-speech translation pipeline using Whisper for ASR and XTTS for TTS. Integrated with FastAPI for local deployment, enabling seamless voice translation across multiple languages.

AgriCash Avatar Speech-to-Speech Guide
Technologies: PyTorch, CUDA, Advanced RAG, FastAPI, Hugging Face Transformers (XTTS)
Built an interactive avatar guiding users through the AgriCash app using XTTS, CUDA, and advanced RAG.

Production Chatbot for Manufacturing
Technologies: PyTorch, CUDA, Advanced RAG, FastAPI
Built a locally deployed chatbot for production QA, supporting queries on material codes and component data.

Crypto Stock Market Analysis
Libraries: Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, PyTorch
Predicted cryptocurrency price changes using statistical and ML techniques.

Dysarthria Classification using CNNs
Technologies: Python, Librosa, CNNs
Created a CNN for detecting dysarthria based on extracted speech features.

Room Style Transfer Using CycleGAN & Stable Diffusion
Technologies: Python, CycleGAN, Stable Diffusion
Generated new room styles from text/image input for visual redesign simulation.

ACHIEVEMENTS

- Participated in GenZeurs Hackathon 2023

- Student Union Readiness Program 2023

- 3rd Place – IEEE Helwan RAS Auxillio 6.0 (Robotics Manufacturing 2023)

- 2nd Place – IEEE Helwan RAS Auxillio 5.0 (Robotics Manufacturing 2022)

- Full Scholarship – Nile University ITCS School (2021)

- 1st Place – "Abakera TV Show" Season 10 (General Information, 2020)