Eslam Ashraf Elsawy

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SUMMARY

AI Engineer and Computer Science graduate with hands-on experience in developing GenAI-powered enterprise applications, integrating Azure Cognitive Services, and building Retrieval-Augmented Generation (RAG) pipelines using vector databases. Proficient in Python, with a strong background in NLP, computer vision, LLMs, and multimodal AI systems. Adept at working within structured team environments to deliver scalable, production-ready solutions.

EDUCATION

Faculty of Computers and Artificial Intelligence, Benha University   **Benha, Al-Qalyubia, Egypt**
Bachelor's Degree in Computer Science. - Grade: Very Good with Honors.   *Sep. 2018 - Jul. 2022*

Diploma in AI, Data Science, and Cloud Computing   **Hybrid, Egypt**
Digital Egypt Builders Initiative (DEBI), Ministry of Communication   *Jan 2024 - Dec 2024*

- Completed an 8-month program focusing on Data Science, Artificial Intelligence, and Cloud Computing.
- Gained practical AI problem-solving experience and built end-to-end AI solutions.
- Learned advanced concepts of machine learning, deep learning, and natural language processing.
- Designed infrastructure for big data storage and cloud-based AI solutions.

WORK EXPERIENCE

AI Engineer   **Remote**
(Freelance)   *Dec 2024 - Present*

- Designed and delivered end-to-end AI applications powered by Generative AI models (e.g., GPT-4o, Gemini), integrating Retrieval-Augmented Generation (RAG) pipelines and vector database search for contextual understanding.
- Built scalable NLP services supporting multiple languages using Azure Cognitive Services (Text Analytics, Translator, Speech) and custom transformer pipelines.
- Developed backend APIs using FastAPI, with session handling and automation workflows via Redis and RESTful service integration.
- Created interactive dashboards and monitoring tools using Streamlit, and deployed complete solutions to Microsoft Azure cloud infrastructure.

AI Developer – MCIT (Gov. Innovation Project)   **Remote, Egypt**
Ministry of Communications and Information Technology (MCIT)   *Nov 2024 - Mar 2025*

- Developed a multimodal AI system for employee performance evaluation, integrating video, audio, and text analytics with Generative AI models (Llama 3, Qwen-VL) and Vector Databases for structured report generation.
- Utilized OpenPose and MediaPipe for gesture and emotion recognition, and Whisper and Praat for audio processing, deploying solutions on Azure cloud.
- Compared open-source AI pipelines with Gemini 2.0 Flash to optimize efficiency and accuracy, achieving startup prototype recognition for real-world impact.

AI Engineer (Internship) – NBE   **Remote, Egypt**
National Bank of Egypt (NBE)   *July 2024 - Oct 2024*

- Built the Financial Dashboard Auto Transcript Analyzer using Gen-AI.
- Designed an interface for users to access the Financial Dashboard.

PROJECTS

- **AI-driven Video Processing Agent - Ministry of Communications and Information Technology "MCIT" [link]:**
  - **Overview:** Developed a multimodal AI system for the Ministry of Communications and Information Technology to analyze video, audio, and text, generating structured reports for performance evaluation. Recognized as a startup due to the project's impact.
  - **Key Features:**
    - Video analysis with gesture recognition and facial expression tracking using OpenPose, MediaPipe, and OpenCV.
    - Audio processing including speech-to-text conversion and pronunciation analysis with Whisper, Praat, and librosa.
    - Text analysis for grammar checking and vocabulary evaluation using spaCy and LanguageTool.
    - Automated report generation leveraging LLMs such as Llama 3 and Qwen-VL.
    - Performance comparison of open-source AI pipelines against Gemini 2.0 Flash for efficiency and accuracy.
  - **Technologies:** OpenPose, MediaPipe, OpenCV, Whisper, Praat, librosa, spaCy, LanguageTool, Llama 3, Qwen-VL, Gemini 2.0 Flash.

- **Omnichannel AI Tourism Agent - Egyptian Travel Agency:**
  - **Overview:** Developed an omnichannel AI conversational agent for an Egyptian travel agency, utilizing Generative AI and Retrieval-Augmented Generation (RAG) to deliver context-aware responses in Egyptian Arabic across Web, WhatsApp, Facebook Messenger, and Instagram.
  - **Key Features:**
    - Implemented multilingual NLP with Gemini 2.5 Flash for real-time intent detection in Egyptian Arabic and English.
    - Built a RAG pipeline with semantic chunking, HuggingFace embeddings, ChromaDB, and cross-encoder reranking for precise data retrieval from PDF knowledge bases.
    - Integrated FastAPI with Meta APIs and webhooks to manage messaging and a web-based chat interface.
    - Enabled session tracking and conversation summarization using JSON persistence for seamless interactions.
    - Deployed a scalable backend with Uvicorn and Ngrok, ensuring robust social media API integration.
  - **Technologies:** Gemini 2.5 Flash, LangChain, ChromaDB, HuggingFace (Embeddings, Cross-Encoders), FastAPI, Uvicorn, Ngrok, Meta APIs (WhatsApp, Messenger, Instagram), JSON, Python, asyncio.

- **Financial Dashboard Auto Transcript Analyzer - using Gen-AI "NBE" [link]:**
  - **Overview:** Developed a Gen-AI-powered analytics tool to analyze dashboards, extract embedded data from chart images, and generate human-like textual summaries and intelligent responses to user queries, simulating a RAG pipeline.
  - **Key Features:**
    - Extracted structured data and semantic understanding from chart images using Transformers (DonutProcessor, VisionEncoderDecoderModel).
    - Implemented a vector-based query answering system inspired by RAG principles using chart-QA model.
    - Generated narrative-style summaries using GPT-NeoX-20B.
    - Integrated Azure TTS & Translator for multilingual voice output (Arabic, English).
    - Developed web API with FastAPI, deployed via ngrok for external access.
    - Created a PyQt5 desktop application with mouse tracking to capture and submit screenshots for backend processing.
  - **Technologies:** FastAPI, Transformers, RAG-style Retrieval, GPT-NeoX-20B, Azure Cognitive Services, PyQt5, Pyngrok, Pillow, Torch, Python.

TECHNICAL SKILLS

Programming Languages: Proficient in Python (primary development language); working knowledge of C++, Java, and JavaScript.

AI/ML Frameworks: PyTorch, TensorFlow, Keras, Scikit-learn, Hugging Face Transformers.

Generative AI & LLMs: Gemini, GPT-4o, GPT-NeoX, Llama 3, LangChain, RAG (Retrieval-Augmented Generation).

Cloud Platforms: Microsoft Azure (Cognitive Services, Translator, TTS), Azure Functions, AWS Lambda.

Vector Databases: FAISS, Pinecone, Qdrant (used for similarity search and RAG pipelines).

Web & API Development: FastAPI, Flask, REST APIs, ngrok.

Databases: MongoDB, PostgreSQL, MySQL, Oracle.

GUI & Dashboards: Tkinter, PyQt5, Streamlit.

DevOps & Tools: Docker, Git, GitHub, Redis, Selenium, PowerShell, Bash Scripting.

Mathematics & Foundations: Linear Algebra, Probability, Hypothesis Testing, OOP, Data Structures, Algorithms.

COURSES AND CERTIFICATES

- **Azure Certifications:**
    - Microsoft Certified: Azure AI Engineer Associate (AI 102) - Earned August 2025.
    - Azure Data Scientist Associate (DP 100) - Course Completed.
- **DEBI Certifications:**
    - Stanford Machine Learning Specialization.
    - Deep Learning Specialization.
    - MLOps Tools: MLflow and Hugging Face.
    - Generative AI with Large Language Models.
    - Introduction to Agile Development and Scrum (IBM).
    - Cloud Computing Foundations.
    - Cloud Virtualization and Containers and APIs.

LANGUAGES

- Arabic: Native

- English: Professional Working Proficiency

PERSONAL INFORMATION

- Military Status: Exempted