

Professional Summary

Final-year Computer Engineering undergraduate with an immense passion for AI. I enjoy the idea of connecting theoretical foundation to real-world applications and have many "aha" moments as I learn about new technologies and innovative solutions.

Education

Arab Academy for Science and Technology - Faculty of Engineering

SEP. 2020 – JUN

Bachelor in Computer Engineering – GPA: 3.6/4.0 ([Student Transcript Link](#))

- **Related Coursework:** Introduction To Artificial Intelligence, Neural Networks, Image Processing and Pattern Recognition

Projects

These are some of the projects not all of them. You can find the rest on my Github: [MHamdyK](#)

• AI Model Development for En2ly (Startup Application)

Integrated a multi-head AI model into the backend of a startup application to classify and estimate the dimensions of house furniture.

- Trained on the Bonn Furniture Styles Dataset (90k images) and optimized locally.
- Converted the model to ONNX and TFLite for efficient real-time integration, streamlining furniture categorization and dimension estimation.

• Fawry Competition (On-going) | 2 Month Duration | Phase 1 | Qualified

• Face Identification Project:

Developed a deep learning-based face re-identification system to identify staff members

- Fine-tuned an InceptionResNetV1 (pretrained on VGGFace2) with a custom ArcMarginProduct layer, achieving 90% validation accuracy.
- Engineered custom PyTorch datasets with extensive data augmentation and applied cosine similarity on gallery embeddings for accurate staff identity matching.

• Multi-Object Tracking Project:

Developed a complete pedestrian tracking system

- Constructed a MOT pipeline using the MOT20 dataset with YOLOv8 for pedestrian detection and ByteTrack for real-time tracking, achieving a 65% HOTA score under challenging conditions.
- Customized model training with meticulous hyperparameter tuning (SGD with cosine learning rate decay) and robust safe bounding box conversion with annotation validation across datasets.

• English-Arabic Neural Machine Translation using Seq2Seq LSTM RNN ([Github](#))

- Built two LSTM-based seq2seq models (with/without soft-attention) in TensorFlow/Keras for Eng.–Arabic translation.
- Developed data preprocessing pipelines for tokenization, one-hot encoding, and managing start/end tokens.

Courses & Certificates

- DEPI (Digital Egypt Pioneers Initiative) - Google Data Analyst Specialist

OCT. 2024 - Present

- **Embedded Systems Engineer** – AMIT Embedded Systems Course
(Scholarship by Orange) [Certificate Link](#)

SEP. 2024

- **Machine Learning Specialization** (Coursera)

MAY. 2024

- **Zero to Mastery:** Learn PyTorch for Deep Learning, Udemy

JAN. 2024

- **Internet of Things IoT**– Information Technology Institute(ITI) IOT [Certificate Link](#)

SEP. 2022

Technologies

Languages: Python, C++, C, C#, Java, Assembly x86, VHDL, Verilog, SQL.

Skills: PyTorch, TensorFlow, LangChain, Git, Github, Linux, Tableau, Power BI, Vector Database, Data structure, Algorithms, Microcontrollers.