

Mohamed Hamdy

Cairo, Egypt

Linkedin: [mohamdyk](#)

Portfolio: <https://mhamdyk.github.io/>

github.com/MHamdyK
eng.mohamed.hamdyk@gmail.com

Professional Summary

Final-year Computer Engineering undergraduate with an immense passion for AI. I enjoy the idea of connecting theoretical foundations 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 (A+), Neural Networks(A+), Image Processing and Pattern Recognition(A+)

Projects

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

• Fawry Competition (On-going) | 2 Month Duration | Phase 1 | Qualified | Repos: [MOT](#), [ReID](#)

- **Face Re-ID:** Fine-tuned Inception-ResNet-V1 (VGGFace2) with an ArcMarginProduct layer inspired by ArcFace to build an internal face-identification system for Fawry's staff, reaching 92 % validation accuracy; cosine-similarity search on an augmented embedding gallery.
- **Pedestrian MOT:** Delivered a real-time tracking pipeline on MOT20/17 using YOLOv8 for detection and ByteTrack (Implemented MOT by Associating Every Detection Box 2022 paper) for data association, achieving 53 % HOTA in crowded test footage after targeted hyper-parameter tuning (SGD + cosine LR decay).

• SadaCall – Autonomous Cold-Calling Agent MVP (2025).

- **Egyptian Arabic ASR fine-tune:** Adapted Whisper-small on 80 h Egyptian Private Dataset + [CV-Arabic](#) (81 k train / 10 k val / 10 k test) using a single Colab Pro A100 (20 h, ≈\$30). bfloat16 + TF32 optimizations allows to increase batch-size from 16 → 32 (1.6 × throughput); WER slashed from pre-trained 63.5 % → 36.2 % (-27 pp, -43 % rel.).
- **Training:** AdamW 1 e-5 (learning rate 40x smaller than the pre-training learning rate as suggested in the official Whisper paper), 10 k steps, 500-step warm-up, linear decay.
- **End-to-end voice agent:** Whisper STT → CRAG (Contextual Retrieval-Augmented Generation via LangChain + ChromaDB) for long-term real-estate context → FishSpeech TTS (voice-cloning) → Twilio dialer, enabling fully automated, natural cold-calls.
- **Delivery:** Private Gradio demo Space with record/upload interface for instant call playback and transcript review.

• End-to-End Egyptian Arabic ASR with Wav2Vec2 XLS-R [GitHub](#)

- **Pretrained & fine-tuned** on 80K+ Arabic audio samples (30K synthetic + 50K real) for dialect adaption.
- **Built a full pipeline:** 16kHz resampling, diacritic free normalization, custom CTC vocab & dynamic padding.
- **Optimized Wav2Vec2:** froze feature extractor, resized CTC head, trained in **FP16** on P100 GPU, achieving 52% **WER** and saved reusable checkpoints

• AI Model Development for En2ly (Startup Application)

- Integrated a multi head AI model (**Classification** and **Regression** heads) into the back-end 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 on a RTX 3060 GPU.
- Converted the model to **ONNX** and **TFLite** for efficient real-time integration on mobile App, streamlining furniture categorization and dimension estimation.

Courses & Certificates

- **Dr Mostafa Saad CSkilled Python DSA course** APR. 2025 - Present
- **DEPI** (Digital Egypt Pioneers Initiative) - Google Data Analyst Specialist OCT. 2024 – March 2025
- **Embedded Systems Engineer** – AMIT Embedded Systems Course ss SEP. 2024
(Scholarship by Orange) [Certificate Link](#)
- **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++, Java, SQL.

Skills: PyTorch, TensorFlow, LangChain, LangSmith, CrewAI, HuggingFace, Git, Github, Linux, OpenAI API, Vector Database, Data structure, Algorithms, Tableau, Power BI, Microcontrollers, QGIS.