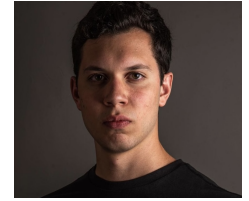


Ahmed Elzayat

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EDUCATION

Erasmus Mundus Joint Master IPCVAI
M.Sc. AI for Image Processing and Computer Vision

Sep 2025 – Current

Cairo University
B.Sc. in Systems and Biomedical Engineering

Oct 2020 – Jul 2025

GPA: **3.9/4.0**

Graduation Project: Web-Based Framework for Brain Tumor Segmentation: Advancing Generalizability Across Diverse Tumor Populations with MTSS-KDNet. 🔗 [Thesis Manuscript \(PDF\)](#)

- Proposed a novel MTSS-KDNet (Multi-Teacher Single-Student Knowledge Distillation) framework—built on top of MONAI and PyTorch—distilling population-specific expertise from specialized teacher models into a unified student model for generalizable brain tumor segmentation.
- Achieved state-of-the-art performance with an average Dice score of **83%** across five heterogeneous brain tumor populations, outperforming population-specific and strong benchmark models.
- Integrated the model into a custom-built, web-based medical imaging platform (MMM.AI) featuring real-time DICOM/NIfTI rendering, interactive segmentation visualization, and an automated LLM-based report generation, built on a cloud-native microservices architecture using Orthanc, Cornerstone3D, React and Docker.

EXPERIENCE

AI Engineer
PaxeraHealth

Aug 2025 – Current
Boston, US [Remote]

- Responsible for the development of AI models (CNNs, LLMs, VLMs) and RAG pipelines and their integration into the company's ARK and PaxeraUltimaAi services.

Software Engineer Intern
Ezz Medical Industries

Aug 2024 – Sep 2024
Giza, Egypt

- Contributed to the front-end web development of the Engineering Requirements Application project using React and JavaScript, implementing dynamic features and improving UX.
- Developed an AI Chatbot for the company's website leveraging OpenAI's API, LangChain and Streamlit.

Technical Service Engineer Trainee
Siemens Healthineers

Jul 2024 – Aug 2024
Cairo, Egypt

- Gained hands-on experience with various diagnostic imaging and laboratory systems including MRI, CT, X-ray, PET-CT and Ultrasound modalities, focusing on the software aspects and technical maintenance of these medical devices.

Machine Learning Engineer Intern
Technocolabs Softwares

Aug 2023 – Nov 2023
Indore, India [Remote]

- Engaged in a multifaceted project encompassing tasks such as Collaborative Filtering, Classification, Data Manipulation, Feature Engineering, Model Training, and Deployment.
- Developed and deployed an AI model for analyzing startup acquisitions status on Crunchbase companies profiles.

CERTIFICATIONS

Deep Learning Specialization | *DeepLearning.AI* 🔗

Jun 2024 – Sep 2024

- Mastered courses on DNNs, CNNs, RNNs, LSTMs, Transformers and their applications in computer vision and NLP. Worked on optimizing deep neural networks and improving structure of ML projects.

Machine Learning Specialization | *DeepLearning.AI & Stanford University* 🔗

Jul 2023 – Sep 2023

- Mastered courses on supervised learning, unsupervised learning, recommender systems and reinforcement learning for building real-world applications.

SKILLS

- **Languages:** Python, C/C++, Java, JavaScript, TypeScript, SQL
- **Machine Learning:** NumPy, SciPy, Pandas, Matplotlib, Seaborn, Scikit-learn, OpenCV
- **Deep Learning:** Keras, PyTorch, TensorFlow, MONAI, Pydicom, Nibabel
- **Developer Tools:** Docker, Shell, Git, Github
- **NLP:** LangChain, LlamaIndex, Haystack, Hugging Face, Lamini, Phoenix
- **Frontend:** React, Next.js, Streamlit, Redux, HTML, CSS, Tailwind
- **Backend:** Node.js, Flask, Uvicorn, FastAPI, Qt Framework, MongoDB
- **Soft Skills:** Leadership, Problem Solving, Communication, Time Management, Attention to Detail

PROJECTS

PerceptoAI 🔗

Python, FastAPI, Haystack, Chroma, SQLAlchemy, Next.js, TypeScript, Tailwind CSS

- Developed an intelligent voice assistant leveraging a Retrieval-Augmented Generation (RAG) pipeline for real-time, context-aware conversational AI, integrating dynamic location, weather, date/time and web search services.

FindMe - Face Detection & Recognition 🔗

Python, FastAPI, OpenCV, Scikit-learn, React, TypeScript, Tailwind CSS

- Developed a face detection & recognition system using eigenvector-based feature extraction and SVM, trained on the ORL dataset for accurate real-time identification across varied conditions.

Advanced Computer Vision Suite 🔗

Python, OpenCV, PyQt

- Developed a full-featured desktop application from scratch, integrating advanced image processing and computer vision techniques—from basic noise manipulation to complex image segmentation.

Home Security Voice-code Access System 🔗

Python, OpenCV, Scikit-learn, Qt

- Developed a voice-activated desktop security app using DSP and machine learning, enabling secure access via spoken passcodes and voiceprint verification with real-time recognition and spectrogram visualization.

Multilingual Named Entity Recognition for Switzerland 🔗

Python, PyTorch, Hugging Face, Scikit-learn

- Developed a multilingual NER NLP system using mBERT and XLM-RoBERTa transformers, evaluated on the PAN-X dataset. Compared monolingual and multilingual fine-tuning strategies across German, French, Italian, and English.

EEG-Based Eye-Open State BCI System 🔗

Python, Scikit-learn, Matplotlib, Arduino, Scipy

- Designed and implemented an EEG-based system with actuator control, incorporating signal preprocessing, feature extraction, and a Random Forest classifier for real-time response to open vs closed eye states.

Fourier Transform Image Processing Mixer 🔗

Python, Qt, Numpy

- Built a desktop app for interactive 2D signal mixing using Fourier Transform, enabling real-time image reconstruction by adjusting magnitude and phase frequency components.

Hospital Admin Prosthetics Website 🔗

JavaScript, React, Supabase, MySQL

- Developed a full-stack web app for hospital prosthetics management with real-time database integration, enabling secure admin login and full CRUD operations across patients, doctors, suppliers, and orders.

EXTRACURRICULARS

Bio-verse Computer Vision Hackathon Participant | Nile University 🔗

Aug 2023

- Developed a deep learning model for breast cancer detection and classification, leveraging image processing and transfer learning techniques on medical imaging data provided by the Baheya Foundation.

OGV Team Leader | AIESEC 🔗

Jan 2022 – Jul 2022

- Worked as an Outgoing Global Volunteer (OGV) team leader at AIESEC Egypt, aiding youth to gain experience by traveling abroad.