Hazem Hassan

Senior ML Engineer

AI engineer with 9+ years of experience developing and deploying ML systems in computer vision, NLP, and speech recognition. Skilled in building scalable end-to-end AI solutions — from research and model design to real-time edge deployment and optimization. Experienced in leading cross-functional teams and integrating cutting-edge models such as V-LLMs and diffusion systems. Looking for a role as a **Lead/Senior Machine Learning Engineer** or **Applied AI Scientist** to drive innovation in vision and generative AI.

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TECHNICAL SKILLS

Programming Languages & Tools	Python, SQL, NoSQL, Flask, Django, Pandas, Scikit-learn, OpenCV, FastAPI, SaaS Solutions, SDK Development	**Computer Vision & NLP:**	OCR, Speech Recognition, Identity Verification, NLP, Face Matching, Image Processing
Cloud Computing Platforms	GCP, AWS, Docker, Kubernetes, CI/CD	**Machine Learning Toolkit**	PyTorch, TensorFlow, Transformers, CLIP, Diffusion Models, KALDI, K2, LLMs, V-LLMs

WORK EXPERIENCE

Senior ML Engineer
Beyond Limits

03/2024 - Present   *EMEA Team*

A pioneering AI company with a unique heritage from the US space program.

Achievements/Tasks

- Designed and deployed **real-time ML pipelines on NVIDIA Jetson edge devices** for **people tracking**, **counting**, and **behavior analysis** across multiple international projects.
- Contributed to the **Single Flow and Double Flow Easier Gates Project**, optimizing real-time detection, flow management, and crowd analytics on **embedded Jetson platforms**.
- Developed **PPE (Personal Protective Equipment) detection** and **safety measurement systems** for **Aramco**, ensuring robust, low-latency inference and compliance monitoring in industrial environments.
- Built and fine-tuned **child violence detection systems** for a **Chinese property client**, leveraging **spatio-temporal action recognition** and **anomaly detection** in CCTV streams.
- Implemented **people counting and crowd distribution analytics** for the **Chinese Festival** and **Haram (SCAI)** projects, ensuring scalable and accurate **multi-camera tracking** under dense crowd conditions.
- Supported **government violation detection systems** for **SCAI**, enabling automated monitoring and compliance tracking through **AI-driven video analytics**.

Technical Lead
IDefy

10/2022 - 02/2024   *Giza,Egypt*

A Spin-Off from RDI, Specialized for Digital Identity Solutions for Onboarding Services and eKYC enabler

Achievements/Tasks

- Led full product lifecycle for digital identity solutions (SaaS, SDK, Web & Mobile Applications).
- Managed multi-disciplinary team (Backend, ML, UI/UX, Mobile, DevOps) for 3 major production deployments.
- Built APIs for Document OCR, Face Matching, Liveness Detection, Identity Verification, and Access Management Systems.
- Responsible for releasing and publishing **IDefy** App for **E-KYC** and **GAMA** for visitor Management System.

WORK EXPERIENCE

Senior ML Engineer (Computer Vision)
RDI

01/2021 - 10/2022   *Giza, Egypt*

It is a leading company related to Arabic Natural Language Processing using Machine Learning and AI solutions

Achievements/Tasks

- Led CV/OCR team delivering Sotoor Arabic OCR System with state-of-the-art accuracy.
- Developed modules for Layout Analysis, Line Segmentation, Font Detection, Text Recognition, Noise Removal, and Document Correction. Adapted K2 Toolkit for text recognition tasks, originally designed for speech models.

PERSONAL PROJECTS

Fiture App (05/2025 - Present) ↗

- Built AI platform integrating V-LLMs, text-prompt segmentation, and diffusion-based avatar generation for personalized virtual try-on.
- Developed an outfit recommendation engine combining mood, climate, occasion, and user preferences into personalized outfit rendering on photorealistic avatars.
- Fine-tuned domain-specific segmentation and detection models improving personalization, object extraction, and avatar fit accuracy.

Post-Operative Infections Prediction (06/2022 - 03/2023)

- Developed predictive ML model for real patient infection outcomes using ensemble models and imputation techniques.
- Achieved 82% Sensitivity and 91% Specificity.
- Collaboration contributed to Newcastle University's PhD work.

Valorant Game Overlay (01/2022 - 06/2022)

- Designed a real-time multi-threaded system extracting gameplay data from Valorant for esports competition overlays.
- Implemented object detection, pattern recognition, and color analysis, achieving a response latency of 50-72 msec.

HONOR AWARDS

1st Position in MGB-5 (2019)
The Multi-Genre Broadcast Challenge MGB-2019

1st Position in RASM (2018)
ICFHR2018 Competition on Recognition of Historical Arabic Scientific Manuscripts

PUBLICATIONS

Examination Paper
Arabic Multi-Genre Broadcast Speech Recognition ↗
December 2019
IEEE ASRU 2019

Conference Papers
Prognostic AI for Post-Operative Infections ↗
August 2023-November 2023
FCI annual conference

Conference Paper
QuranScript Verification System ↗
November 2016
Sixteenth ESOLE Conference of Language Engineering

VOLUNTEER EXPERIENCE

Project Mentor & Judge
Information Technology Institute (ITI)

11/2021 - 01/2022

Mentoring a graduation project for Math Formula Detection and Recognition

Tasks/Achievements

- Mentored Math Formula Detection CV project.
- Provided technical guidance on state-of-the-art CV algorithms.

SOFT SKILLS

Communication Skills   Team Player   Leadership   Resilience and Handling Failures   Adaptability

Critical Thinking   Attention to details