



Hazem Hassan

Senior ML Engineer

Senior Machine Learning Engineer with over 9 years of experience in designing, developing, and deploying ML solutions in production environments across various industries, including computer vision, healthcare, identity verification, NLP, and speech recognition. Demonstrated ability to lead technical teams, adopt cutting-edge AI models, and translate complex business needs into scalable AI products—published author with multiple awards and a strong track record of delivering high-impact, real-world AI systems.

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TECHNICAL SKILLS

Programming Languages & Tools

Python, SQL, NoSQL, Flask, Django, Pandas, Scikit-learn, OpenCV, FastAPI

Cloud Computing Platforms

GCP, AWS, Docker, Kubernetes, CI/CD

Cloud & DevOps

Docker, Kubernetes, CI/CD

Computer Vision & NLP:

OCR, Speech Recognition, Identity Verification, NLP, Face Matching, Image Processing

Machine Learning Toolkit

PyTorch, TensorFlow, Transformers, CLIP, Diffusion Models, KALDI, K2, LLMs, V-LLMs

Web Technologies

REST API, SaaS Solutions, SDK Development

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 edge devices (Jetson Kit) for people tracking, and counting
- Developed spatio-temporal action detection, multi-camera tracking, and violence detection in CCTV streams.
- Developed and fine-tuned Visual Large Language Models (V-LLMs) integrating open-vocabulary detection, text-prompt segmentation, and visual question answering.
- Led end-to-end ML optimization workflows, improving real-time inference efficiency and model deployment robustness.

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 architecture design, roadmap planning, task delegation, testing, and production release.

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.

WORK EXPERIENCE

ML Researcher

RDI

2017 - 2021

Achievements/Tasks

- Focused on Arabic NLP, speech recognition, character recognition, and building foundational AI pipelines using KALDI, and early OCR technologies.

PERSONAL PROJECTS

Fashion Try-On Recommendation App (2025 - Present)

- Built AI platform integrating V-LLMs, text-prompt segmentation, and diffusion-based avatar generation for personalized virtual try-on.
- Developed 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