Ahmed Hassan

Cairo, Egypt

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Education

Egypt Japan University Of Science and Technology Oct 2021 - Expected Mar 2026

Bachelor in Computer Science and Engineering (CGPA: 3.8 / 4.00)

Experience

Anovate.ai Sep 2025 - Present

AI Engineer Intern *Remote*

- Implementing real-time deep learning models for 3D reconstruction, depth perception, and anomaly detection in industrial environments.

Microsoft July 2025 - Aug 2025

Applied Science Intern *Cairo, Egypt*

- Collaborated with the MSN News team on AI-generated content moderation, focusing on detecting hallucinations in AI summaries.
- Improved system performance by increasing hallucination detection recall to 80% while reducing the rejection rate to 40%.

Nile University Aug 2024 - Sep 2024

Undergraduate Research Intern *Cairo, Egypt*

- Conducted research on Large Language Models (LLMs) with a focus on their applications in Arabic education.
- Compiled and curated a dataset of 3,000+ educational questions from 5 Egyptian Arabic websites.
- Fine-tuned the Jais model for Arabic question-answering, boosting performance by 10% for educational queries.
- Attained 93% accuracy in model evaluations across 5 different educational domains.

Publications

DAgent: A Multi-Agent System for Device-Aware Assistance Nov 2025

Accepted at 35th International Conference on Computer Theory and Applications *1st Author*

- Proposed DAgent, a modular multi-agent system with Tracer, RAG, Coding Agent, and Multi-Agent OS Assistant modules for personalized, device-aware assistance, achieving high evaluation scores (Correctness: 4.87, Completeness: 4.53, Clarity: 4.41) and demonstrating the Coding Agent's critical role in ablation studies.

Computational Analysis of Media Bias: Sentiment and Semantic Patterns in The Guardian's Coverage of the Israeli-Palestinian Conflict July 2025

Awaiting Publication at 9th International Conference on Computer-Human Interaction Research and Applications 2025

Co-1st Author

- Conducted multi-method NLP analysis of media framing across decades using transformer-based and word embedding models, revealing systematic biases including 13.5% higher fear-related language in Israeli contexts versus 9.5% higher trust-related language in Palestinian contexts.

ALEX-GYM-1: A Hybrid 3D Pose & Vision Model for Automated Exercise Evaluation | GitHubJuly 2025

Awaiting Publication at 22nd International Conference on Informatics in Control, Automation and Robotics 2025

1st Author

- Developed a novel multi-modal architecture integrating 3D CNN vision-based and pose-based pathways, achieving 30% reduction in Hamming Loss compared to single-modality approaches and 79.5% improvement over pose-only models for exercise form evaluation.

TypePlus: A Deep Learning Architecture for Keystroke Authentication with Loss Function Evaluation | GitHub Feb 2025

Awaiting Publication at 2nd International Conference on Intelligent Systems, Blockchain, and Communication Technologies 2025 *Co-1st Author*

- Designed a lightweight non-transformer architecture with weighted attention pooling and keycode embeddings for free-text keystroke authentication, achieving state-of-the-art 2.86% Equal Error Rate on the Aalto University Keystroke Dataset.

PPE-Det: Evaluating Lightweight Object Detection Models for Edge-Based Safety Monitoring | GitHub Feb 2025

Awaiting Publication at 2nd International Conference on Intelligent Systems, Blockchain, and Communication Technologies 2025 *Co-1st Author*

- Created a novel 5,000-image safety equipment dataset and benchmarked sub-3M parameter detection models on Raspberry Pi 5, finding YOLOv9t and YOLOv11n achieved optimal accuracy-efficiency trade-offs for real-time edge deployment in industrial environments.

DeepCat: A Deep Learning Approach to Understand Your Cat's Body Language | DOI | GitHub Dec 2023

11th International Japan-Africa Conference on Electronics, Communications, and Computations 2023 *Co-1st Author*

- Developed a mobile-friendly deep learning system analyzing 10,000+ cat images to recognize emotional states using key visual markers, achieving 97% accuracy for eye detection, 85% for tail positions and 84% for mouth configurations.

Projects

DanceNet: AI-Enabled Choreography System | *Python, PyTorch* | Github Mar 2025 - Apr 2025

- Built dance-language translation pipeline using OpenPose skeleton extraction and BERT embeddings, processing 10,000+ motion sequences.
- Designed a VAE architecture (2 LSTM encoders, 1 GRU decoder) that compressed 53-point skeleton poses to 128-dimensional latent vectors while maintaining 87% reconstruction fidelity.
- Implemented contrastive loss function (margin=0.5) that aligned text and motion embeddings, achieving 84% cross-modal retrieval precision.
- Developed a retrieval system using KMeans clustering (optimal K=3 via silhouette score) that reduced annotation requirements by 75% while maintaining semantic similarity scores above 0.82.

3D Cardiac MRI Synthesis and Artifact Removal | *GANs, U-Net* | *Ongoing Research* Feb 2025 - Present

- Designed a teacher-student GAN framework for realistic 3D cardiac MRI synthesis, achieving 92.57% fidelity compared to real datasets.
- Developed a U-Net-based denoising model that improved PSNR by up to 5.68 and SSIM by up to 0.16 across motion and low SNR artifacts.
- Simulated clinical noise (Rician, Gaussian, salt-and-pepper) to enhance robustness, enabling artifact removal in over 95% of test cases.

SuperSafety System | *Python, PyTorch, MediaPipe* | Github Jan 2024 - May 2024

- Implemented Progressive Growing GAN architecture that enhanced low-resolution (64x64) surveillance footage to 256x256 with 4.2 Fréchet Inception Distance score.
- Fine-tuned YOLOv8 model on custom 2,500-image dataset of industrial environments, achieving 96% mAP@0.5 for PPE detection.
- Created MediaPipe-based tracking algorithm that associated PPE items with worker body parts, maintaining 93% tracking accuracy through occlusions.
- Coordinated 9-person team using Agile methodology (2-week sprints), delivering final system with 97% of planned features within deadline.

Technical Skills

Languages: Python, C++, C, Java, JavaScript, TypeScript, Go, SQL
AI/ML Tools: PyTorch, TensorFlow, scikit-learn, OpenCV, NumPy, Pandas, LangGraph, Langchain, CrewAI
Web & Systems: Node.js, Express.js, MongoDB, Docker, Kafka, RESTful APIs
Expertise: Computer Vision, NLP, Deep Learning, Software Engineering, Backend Engineering
Languages: Arabic (Native), English (Fluent, IELTS: 8.5 Listening, 8.5 Reading, 7.0 Writing, 7.0 Speaking, 8.0 Overall)