Ahmed Hassan

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Education

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

Bachelor in Computer Science and Engineering (CGPA: 3.86 / 4.00)

- **Relevant Coursework:** Data Structures (C++), Probability and Statistics, Computer Organization (C), Discrete Mathematics, Advanced Programming (Java), Computer Programming (Python), Design and analysis of algorithms

Experience

Nile University Aug 2024 - Present

Undergraduate Research Intern *Cairo, Egypt*

- Engaged in ongoing research on Large Language Models (LLMs), exploring their applications and impact in Education.
- Collaborating with a professor to design and conduct experiments.
- Currently conducting data collection and analysis using Pytorch to support research findings and advance project objectives.
- Drafting a Research paper to communicate progress and findings.

Publications

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

Presented at the International Japan-Africa Conference on Electronics, Communications, and Computations (JAC-ECC)

- Devised an innovative architecture utilizing Python, OpenCV, YOLOv8, and a Voting classifier to analyze cat emotions.
- Applied advanced deep learning techniques for precise emotion recognition.
- Achieved exceptional performance metrics with 97% accuracy for eye recognition, 82% to 84% for mouth labels, and 85% for tail recognition.
- Thoroughly evaluated the model's efficacy through rigorous cross-validation and comparison with state-of-the-art methods, consistently demonstrating superior results.

Projects

Counter Strike Aimbot | *Python*, *Pytorch*, *OpenCV* | Github Apr 2023 - Jun 2023

- Developed a computer vision-based aimbot for Counter-Strike achieving 95% accuracy in enemy detection and shooting.
- Augmented dataset with over 1000 gameplay screenshots, significantly boosting performance.
- Annotated 1000+ images using LabelImg, enhancing model accuracy by 20%.
- Trained YOLOv5 achieving 30ms/frame detection speed and 40% improved shooting precision.

SuperSafety System | *Python*, *Pytorch*, *MediaPipe* | Github Sep 2023 - June 2024

- Implemented Progressive Growing GAN (PGGAN) and Enhanced Super-Resolution GAN (ESRGAN) models for image resolution enhancement in industrial surveillance.
- Utilized SSD, MobileNet SSD, and YOLOv8 for real-time hazard detection achieving 85% accuracy in identifying helmets, vests, gloves, and masks.
- Designed an algorithm using Mediapipe for PPE adherence detection, achieving 95% accuracy in PPE detection.
- Led a team of five engineers in the development and deployment phases, ensuring project deadlines and quality standards were met.

CineList | *Express.js* | Github Aug 2024 - Present

- Developed a RESTful API for managing movie lists, integrating with The Movie Database (TMDB) API to fetch and manipulate movie data.
- Implemented CRUD operations to create, retrieve, and delete movie lists using Express.js, with endpoints for managing list operations and handling complex data manipulations.
- Utilized axios for asynchronous operations, ensuring efficient handling of multiple requests and robust error handling for API interactions.
- Designed the project structure with dedicated folders for controllers, models, routes, and utility functions, enhancing code organization and maintainability.

Technical Skills

Programming Languages: Python, C++, C, Java, Javascript, SQL
Frameworks and Technologies: Pytorch, OpenCV, scikit-learn, Numpy, Pandas, Tensorflow, Node.JS, Express.JS, Arduino, MongoDB
Concepts: Backend, Computer Vision, Natural Language Processing, Reinforcement Learning, Deep Learning, Machine Learning
Languages: Arabic (Native) , English

Courses

Deep Learning Specialization | Certificate

- Explored neural network concepts: feedforward networks, convolutional neural networks (CNNs), recurrent neural networks (RNNs).
- Mastered optimization techniques: gradient descent, stochastic gradient descent, Adam optimization for deep learning models.
- Studied advanced topics: transfer learning, Transformers for real-world deep learning projects.

Mathematics for Machine Learning Specialization | Certificate

- Developed understanding of linear algebra principles: vector spaces, matrices, eigenvalues, eigenvectors for machine learning algorithms.
- Mastered calculus techniques: differentiation, integration, optimization for complex machine learning systems.
- Acquired knowledge in Principal Component Analysis (PCA): technique for dimensionality reduction, data preprocessing, feature extraction.

Generative Adversarial Networks (GANs) Specialization | Certificate

- Explored GAN basics: architecture, training processes, applications in generating realistic images and data.
- Implemented GAN architectures: Deep Convolutional GANs (DCGANs), Wasserstein GANs (WGANs), Conditional GANs (CGANs) for image generation, manipulation.
- Studied advanced GAN topics: techniques for stability, convergence (gradient penalty, spectral normalization), applied to image-to-image translation, style transfer.

Volunteering

E-JUST Robotics Club 2022 - 2024

Vice-Head Technical

- Orchestrated technical competitions and operations in the role of vice head, ensuring smooth execution and participant satisfaction.
- Played a pivotal role in the Computer Vision aspect of the ROV Competition, contributing to a top 10 regional placement.
- Mentored a cohort of 150 students on robotics fundamentals and conducted engaging OpenCV sessions to foster skill development.
- Spearheaded the organization of two impactful events, overseeing 20 projects per event and providing technical guidance to over 50 participants.