Mahmoud Abdelaal Mohammed

Machine learning Engineer

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SUMMARY

A results-driven AI and Machine Learning professional with expertise in developing and deploying advanced solutions using PyTorch, TensorFlow, and Django. Skilled in computer vision, NLP, and MLOps practices, including Docker and Kubernetes, with a proven track record of delivering innovative projects like real-time safety systems and AI-powered chatbots. Strong technical skills, problem-solving abilities, and a commitment to driving impactful AI and software development solutions.

EDUCATION

Bachelor of Computer Science and Artificial Intelligence

- Helwan University, Helwan, Egypt (September 2021 – Present).

- Specializing in advanced AI techniques and applications.
- Relevant Coursework: Machine Learning, Deep Learning, Natural Language Processing, Computer Vision.

EXPERIENCE

1. **Computer Vision Engineer Intern at Cellula Technologies**:   **Duration**: Jan 2025 - present
   - Developed and optimized deep learning models for object detection, image segmentation, and classification
   - Worked with OpenCV, PyTorch, and TensorFlow to enhance real-time image processing applications
   - Applied advanced data augmentation, synthetic data generation, and contrastive learning to improve model robustness and generalization
   - Contributed to research on advanced computer vision techniques, including self-supervised learning and multi-modal models

2. **Ai Engineer Intern at Digital Hub Center(Orange):**   **Duration**: 2 months Nov 2024 – Jan 2025

   - Developed and fine-tuned deep learning models using PyTorch and TensorFlow, optimizing performance for NLP and computer vision tasks.
   - Implemented LLMs, transformers (BERT, GPT), and GANs (StyleGAN, CycleGAN**)** for text generation, image synthesis, and enhancement Collaborated.
   - Utilized Applied MLOps best practices, including model deployment, versioning, monitoring, and automated pipelines using tools like Docker, MLflow, and Kubernetes

3. **Python internship** at **ITI (Information Technology Institute):**   **Duration**: 2 months July 2024 – Aug 2024
   - Developed and deployed Python-based web applications, working with backend technologies like Django and Flask Worked on various projects involving NLP and CV to solve real-world problems.
   - Built RESTful APIs and integrated databases using PostgreSQL and MySQL.

PROJECTS

Attendance System Using Face Recognition:

- Python, OpenCV, YOLO face recognition, Streamlit (for deployment) , NumPy, Deep Learning, Computer Vision.

- Developed and deployed an attendance tracking system leveraging AI for face recognition. The system required only a single photo per person for accurate identification, recorded attendance
- automatically every 30 seconds, and summarized the data at the end of the session, exporting it to a CSV file for easy record-keeping and analysis.

AI-Powered Robbery Detection System

- Developed and deployed a real-time AI system to detect shoplifting behavior in retail environments using video.
- Integrated a YOLOv8 object detection model with a custom-trained deep learning classifier to distinguish between "Shoplifter" and "Non-Shoplifter" with over 98% validation accuracy.
- Built a full-stack web application using Django, PyTorch, and OpenCV to automate frame extraction, detection

MediChat-LLM– AI-Powered Medical Chatbot:

- Technologies Used: Python, Flask, LLaMA2, LangChain, Pinecone, Hugging Face
- Developed an end-to-end medical chatbot using a fine-tuned LLaMA2 model, providing contextual healthcare
- Integrated Pinecone vector embeddings for efficient knowledge retrieval and contextual conversation handling.

AI Business Communication Platform:

- Developed a comprehensive AI-powered communication platform using Flask, designed to automate business workflows including email generation, report writing, and live chat.
- Integrated Google Gemini and Groq APIs to generate intelligent content such as professional emails, structured business reports, and contextual chatbot responses.
- Implemented secure user management with Flask-Login and personalized AI content preferences.

COURSES

- CCS50: Introduction to Computer Science Harvard University (edX)
- Natural Language Processing Specialization (Coursera)
- Machine Learning specialization (Coursera)
- Deep Learning for Computer Vision(maharatech)
- Applied Deep Learning(maharatech)
- Deployment of Machine Learning Models
- Transformers in Computer Visio(Coursat.ai)
- Practical GenAI (3 parts) (Coursat.ai)

TECHNICAL SKILLS

- **Programming Languages:** Python, JavaScript, C/C++, Java, F#
- **Web Development:** HTML, CSS, JavaScript ● **Database:** MySQL.
- **Machine Learning:** Sklearn, NumPy, pandas, PyTorch, TensorFlow; experience in supervised learning, deep learning, and YOLO-based models.
- **AI & Data Science:** Computer Vision (CV), Natural Language Processing (NLP), Large Language Models (LLMs).
- **Data Structures & Algorithms:** Strong proficiency in Data Structures, Algorithms, and Object-Oriented Programming (OOP).
- **Development Tools: Docker, Label Studio, Azure Data Studio, VS Code, Jupyter, Git/GitHub.**
- **Cloud Deployment:** Experience deploying applications with **Streamlit Cloud.**
- **Cloud Computing: AWS services**
- **Office Suite:** Microsoft Word, Excel, PowerPoint

EXTRA

- **Personal Skills**: Responsibility, Teamwork, Communication Skills, Analytical thinker, Flexibility, Innovative
- **Languages:** English (Very good to Excellent), Arabic (Native proficiency)