Mostafa Mohamed Mostafa

AI Engineer

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SUMMARY

AI Engineer with hands-on experience in machine learning, deep learning, computer vision, and NLP. Skilled in building and deploying end-to-end AI solutions using Python, PyTorch, TensorFlow, Hugging Face, and LangChain. Passionate about solving complex problems and continuously improving ML model performance.

EDUCATION

Bachelor of Biomedical Engineering | 2020 – 2025

Helwan University, Egypt

- **Grade**: Excellent (88%).
- **Relevant Coursework**: Machine Learning, Artificial Intelligence, Data Structures & Algorithms, Image processing.
- Graduated with Honors (Top 5% of class).

Internships, Trainings & Certifications

Digital Egypt Pioneers Initiative (DEPI) | Scholarship in Generative AI **|** certificate

Apr 2024 – Dec 2024 | Cairo

Key areas covered:

- Machine Learning (ML) & Deep Learning (DL)
- Generative AI models
- MLOps (MLflow, Hugging Face)
- NLP using attention models
- LLMs

National Telecommunication Institute (NTI) | Deep Learning Intern **|** certificate

Feb 2025 – Apr 2025 | Cairo

Key areas covered:

- Built CNNs and deep learning models using PyTorch and TensorFlow.
- Deployed classification models and evaluated their performance.

National Telecommunication Institute (NTI) | Machine Learning Intern **|** certificate

Oct 2024 – Dec 2024 | Cairo

Key areas covered:

- Developed ML models with Python, Scikit-learn, and TensorFlow.
- Focused on preprocessing pipelines, model tuning, and evaluation.

IEEE-Helwan | Machine Learning Intern **|** certificate

Sep 2023 – Nov 2023 | Cairo

Key areas covered:

- Worked on team AI projects, enhancing collaboration and problem-solving skills.

PROJECTS

Medical Q&A with RAG (Retrieval-Augmented Generation) | [repo](#)
- Built a voice- and text-based AI medical assistant using LangChain and LLMs (LLaMA 3).
- Utilized advanced NLP and document retrieval techniques to ensure reliable responses.

Image Captioning | [repo](#)
- This project implements an image captioning system using PyTorch, leveraging a ResNet-50 encoder and an LSTM-based decoder.
- Generated image descriptions trained on the Flickr-8k dataset.
- Evaluated qualitatively and through sample outputs.

Named Entity Recognition (NER) | [repo](#)
- A comparative study of two deep learning architectures – Long Short-Term Memory (LSTM) networks and Bidirectional Encoder Representations from Transformers (BERT) – for Named Entity Recognition (NER).
- The project aims to identify and classify named entities in text data, demonstrating the performance characteristics of each model.
- Achieved almost similar performance across both models in entity classification tasks.

Sarcasm Detection | [repo](#)
- A project focused on identifying sarcastic statements in textual data using advanced NLP techniques.
- An implementation of two deep learning models — BERT and LSTM — trained to detect sarcasm in news headlines.
- Achieved for BERT: F1-score 90.6% | LSTM: F1-score 83.2%.

NYC Taxi Trip Duration | [repo](#)
- This project aims to predict the total ride duration of taxi trips in New York City as part of the NYC Taxi Duration Prediction competition on Kaggle.
- Achieved RMSE: 0.4012 and R^2: 0.7485 on the validation set.

Credit Card Fraud Detection | [repo](#)
- Credit Card Fraud Detection project using a dataset from Kaggle, which includes 170884 credit card transactions with only 305 frauds, is highly unbalanced. To address the class imbalance, the project implements some models, achieving 85% PR_AUC.

ECG Classification | [repo](#)
- Built an ECG arrhythmia classifier in TensorFlow.
- Reduced false positive rate by 15%, improving clinical decision-making support.

Vehicle Recognition – Modifier 8.0 Hackathon (2nd Place) | [repo](#)
- This project focuses on building models to recognize different types of vehicles from images. The project explores several deep learning approaches including VGG16 with Random Forest, InceptionResNetV2, and a custom CNN model.
- Achieved validation accuracy: 95%.

RELEVANT COURSES

Practical Large Language Models (LLM) | Udemy **|** 2025 **|** [certificate](#)
- Hands-on experience with LLMs, including fine-tuning and deployment.

Machine Learning Diploma | CSkilled **|** 2023 – 2024 **|** [certificate](#)
- Comprehensive diploma covering supervised and unsupervised learning, deep learning and developing End to End ML projects.

ML & DL Optimizers – Theory & Implementation | Udemy **|** 2024 **|** [certificate](#)
- Studied mathematical foundations and practical use of optimizers in machine learning and deep learning.

Machine Learning Specialization | Coursera **|** 2023 **|** [certificate](#)
- Introduction to AI concepts, including machine learning, neural networks, and AI applications across industries.

SKILLS

- **Programming Languages:** Python, R, C++
- **AI Frameworks:** PyTorch, TensorFlow, Scikit-learn, Keras, Hugging Face Transformers
- **Computer Vision:** OpenCV, YOLOv10/11, EfficientSAM, U-Net, Instance Segmentation
- **NLP:** RAG, LangChain, BERT, LSTM, LLaMA, GPT, Tokenization, Sequence Modeling, NLTK
- **Model Optimization:** Quantization, Pruning, ONNX Runtime, Knowledge Distillation
- **Data Tools:** Pandas, NumPy, SQL, Matplotlib
- **Other:** Git, GitHub, DSA, MLOps, Object-Oriented Programming, Problem-Solving, Signal Processing
- **Soft Skills**: Excellent communication, time management and teamwork

LANGUAGES

- **English:** Very Good
- **Arabic:** Native