Mohamed Abdulazeem

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Education

Helwan University Sept. 2022 – Expected June 2026

B.S. Computer Science | Transcript Link

Coursework: Artificial Intelligence, Machine Learning, NLP, Data Structures & Algorithms, OOP, Software Engineering, Databases, Big Data, Operating Systems, Networks, Distributed Systems, Statistics, Convex Optimization.

Experience

DEPI - AI & Data Science Track Oct. 2024 – June 2025

ML Engineer Intern *Cairo, Egypt*

- Participated in an intensive training program involving Data analysis, Machine learning, and Deep Learning.
- Applied machine learning algorithms to solve real-world problems, refining skills in data handling, model tuning, and performance optimization.

Projects

Realtime Meeting Assistant | Github | (RAG, FastAPI, React, Qdrant) 2025

- Built a real-time Retrieval-Augmented Generation (RAG) application that transcribes streaming audio using WhisperX and stores transcriptions for retreival.
- Integrated Qdrant vector database to store transcriptions' embeddings and utilized hybrid search by combining dense and sparse embeddings for more accurate information retrieval.
- Utilized LLMs to contextually link new and previous transcription chunks to enrich embeddings and enhance context-aware responses during user queries.
- Developed a RESTful API for managing audio uploads and LLM context-aware question answering.

Computer Vision Sudoku Solver | Github | (Python, Pytorch, OpenCV, Flask) 2025

- Developed a computer vision app that receives sudoku images via a Flask server, solves the puzzles, and overlays the solutions on the original images.
- Trained a Convolutional Neural Network to classify digits extracted from sudoku puzzles with 99.91% accuracy.

Agricultural Optimization with ML | Github | (Python, Scikit-learn, Pandas, Dash) 2025

- Built a web-based machine learning tool to recommend the most suitable crops based on environmental and soil conditions.
- Used clustering to group crops by shared characteristics, helping to improve decision-making and resource usage.
- Evaluated and compared multiple classification models, with the top-performing model achieving 99% precision, recall, and F1-score.

COVID-19 Dashboard | Github | (Python, Pandas, Dash) 2024

- Created an interactive dashboard to track and analyze global COVID-19 trends over time.
- Integrated dynamic charts, filters, and an intuitive UI to enable seamless exploration of trends across regions and timeframes.

Gomoku AI | Github | (Python, Pygame) 2024

- Developed an AI-powered Gomoku game using the Minimax algorithm with alpha-beta pruning, improving game tree search efficiency by 60%.
- Designed heuristic evaluation functions to identify promising and threatening patterns, enabling smarter move selection.
- Built a flexible difficulty system by tuning search depth and heuristic weights to support multiple skill levels.

Skills

Programming Languages: Python, C++, Java, JavaScript/TypeScript, SQL

Machine Learning: Pytorch, TensorFlow, Keras, scikit-learn, NumPy, pandas, Supervised learning, Unsupervised learning, Feature Engineering, Deep Learning, Transfer Learning, Fine-tuning, Prompt Engineering

Frameworks & Tools: React, Flask, FastAPI, LangChain, Llamaindex, Huggingface, OpenAI API, OpenCV

Technologies: Git, PostgreSQL, MySQL, Qdrant, Pinecone, Azure, Docker, REST API