

Ahmed Ahmed

Machine Learning Engineer

☎ +201118261631

✉ ahmedmuhammadahmud@gmail.com

in Ahmed Muhammad



ahmudmuhamad

Professional Summary

Machine Learning and Data Science Engineer with strong expertise in building end-to-end AI solutions. Experienced in the full ML lifecycle. Skilled in advanced machine learning and deep learning techniques. Proficient in MLOps practices including experiment tracking, model versioning, CI/CD, and containerization with MLflow, GitHub Actions, and Docker. Hands-on experience with AI Agents and automation workflows using CrewAI, LangGraph, smolagents, and LlamaIndex to design intelligent multi-agent systems. Adept at translating business problems into data-driven solutions and communicating insights effectively to both technical and non-technical stakeholders.

Education

Nile University

Bachelor's Degree in Computer Science

July. 2020 - July 2024

Cairo, Egypt

Work Experience

STEM Instructor

iSchool

July. 2025 - Present

- Delivered interactive lessons covering programming and foundational Computer Science concepts.
- Mentored students in coding projects, fostering critical thinking and problem-solving skills.

Data Scientist

Singularity Labs

JUNE. 2024 - JULY. 2025

- Collaborated effectively with cross-functional teams through active listening and clear communication to design and implement AI-driven solutions.
- Communicated complex technical capabilities to non-technical stakeholders with empathy and clarity, significantly improving sales productivity and customer experience.

Projects

MisrLeX - Egyptian Legal RAG Platform

Project Link

- Developed a Retrieval-Augmented Generation (RAG) platform for legal document management and question answering, tailored for Egyptian law.
- Built a scalable backend using FastAPI and PostgreSQL (with pgvector extension) for efficient document storage, chunking, and vector search.
- Designed the backend following the MVC pattern to enable better modularity and scalability.
- Integrated modern LLMs for multilingual (English/Arabic) legal Q&A and document analysis.
- Implemented a Provider Factory design pattern for seamless integration and management of multiple LLM providers (OpenAI, Cohere, JinaAI, HuggingFace).
- Deployed the solution using Docker Compose, orchestrating FastAPI, Qdrant, PostgreSQL, pgAdmin, and Nginx services.
- Added monitoring with Prometheus and Grafana for production readiness.

Key Technologies: FastAPI, PostgreSQL, pgvector, Qdrant, Docker Compose, Prometheus, Grafana, LLMs (OpenAI, Cohere, HuggingFace)

Mobica Find - AI-Powered Product Search System

- Designed and developed an intelligent product search system to help sales teams instantly find the most similar furniture products based on a given image or description.

- Replaced manual and error-prone identification processes with AI-powered similarity search using multimodal embeddings.
- Collected product images and descriptions, generated embeddings using ALIGN (image + text), and stored them in a vector database (FAISS) for efficient similarity queries.
- Resulted in faster client responses, reduced dependency on human expertise, and improved accuracy in product matching.

Key Technologies: Python, ALIGN, FAISS, Embeddings, Multimodal AI, Vector Databases

Customer Churn Prediction Project

- Developed an end-to-end machine learning pipeline to predict customer churn using Python and libraries such as pandas, scikit-learn, and XGBoost.
- Conducted data preprocessing, exploratory data analysis, and feature engineering in Jupyter notebooks.
- Built, tuned, and evaluated multiple models (logistic regression, random forest, XGBoost) with Optuna for automated hyperparameter optimization.
- Implemented model validation, calibration, and performance monitoring; tracked experiments and managed model versions using **MLflow**.
- Exposed the final model as a REST API using **FastAPI** for real-time predictions.
- Automated CI workflows with GitHub Actions to ensure reproducibility and continuous integration.
- Containerized the solution with Docker for scalable deployment.
- Documented results with visualizations and reports, and organized model artifacts for transparency and reusability.

Key Technologies: Python, pandas, scikit-learn, XGBoost, Optuna, MLflow, FastAPI, Docker, GitHub Actions

Medical Chatbot Assistant

Project Link,

- Developed an AI-powered chatbot tailored for Arabic-speaking users to provide informative responses to medical symptoms and questions.
- Integrated and fine-tuned a LLaMA language model using the MAQA dataset (430,000+ QA pairs across 20 medical specializations).
- Developed scalable backend using Node.js and MongoDB Atlas for secure user data handling.
- Built a responsive frontend using **HTML, CSS, and JavaScript** for user interaction and chat experience.

Key Technologies: LLaMA, MAQA dataset, Node.js, MongoDB Atlas, HTML, CSS, JavaScript, NLP, Chatbot Development

Adventure Work Sales Dashboard

Power BI

 [View Dashboard](#)

- Created comprehensive data model supporting efficient querying and statistical reporting through systematic planning and analytical thinking.
- Developed calculated columns and measures using DAX for advanced analytics.
- Designed interactive dashboard visualizing sales performance with clear communication of insights, showcasing data storytelling abilities and stakeholder engagement skills.

Key Technologies: Power BI, DAX, Data Modeling, Business Intelligence

Technical Skills

Programming Languages: Python, JAVA, Node.js, C++, Javascript, HTML, CSS

Data Visualization: Power BI, Tableau (familiar), Matplotlib

Machine Learning & AI: PyTorch, Transformers, LangChain, LlamaIndex, RAG, Fine-tuning, Sci-kit learn

Statistics & Analytics: Statistical Analysis, Data Modeling, Exploratory Data Analysis (EDA)

Databases: MySQL, MongoDB

Development Tools / MLOps: FastAPI, Flask, Docker, Git, Github, Github Actions (CI/CD), MLFlow

AI Agents: CrewAI, smolagents, LangGraph, LlamaIndex, n8n.

