Mostafa Samy

AI Engineer & Data Scientist

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Summary

AI Engineer & Data Scientist with 3+ years of experience delivering end-to-end ML and LLM solutions across vision, NLP, and predictive analytics, improving model performance by up to 32%. Skilled in MLOps, scalable deployment, and real-time inference using Docker, MLflow, and cloud platforms. Specialized in LLM engineering and agentic systems, building production-ready AI solutions that turn complex business needs into high-impact results.

Education

ITI Professional Training Program Specialized in AI   10/2023 – 06/2024

self-directed learning effort (ITI curriculum)   Cairo, Egypt
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Bachelor's degree in computer and information sciences, Assuit University   09/2018 – 01/2023
Department: Bioinformatics.   Assuit, Egypt
CGPA: Very Good

Professional Experience

AI Instructor | Mobica International School (Full Time), Mobica   08/2024 –Present
My responsibilities included: Onsite, Giza, Egypt
- Delivered courses in SQL, data analysis, Power BI, and machine learning with a 95% student satisfaction .
- Mentored 50+ students in building and deploying real-world AI applications, including computer vision projects (e.g., object detection using YOLO/CNNs) and LLM-based solutions for text generation, summarization, and intelligent Q&A systems.
- Led the implementation of production-ready AI systems applying OpenCV, transformers, and NLP pipelines to solve real business problems.
- Introduced and applied MLOps practices including model tracking, versioning, reproducibility, and deployment using Git, MLflow, and Docker.

Freelance Data Scientist (Projects via Mostaql, referrals, and direct clients)   02/2023 –Present
Developed and deployed ML models for classification, regression, and clustering with strong emphasis on EDA, feature engineering, and business impact—boosting marketing efficiency by 20%. Delivered end-to-end pipelines for projects such as:
- **Restaurant Intelligence**: Location optimization, delivery delay prediction, and demand-based recommendations.
- **Inventory App**: YOLO-powered desktop app with object detection, camera tracking, NFCs, and live dashboards.
- **NYC Airbnb & Lung Cancer Prediction**: Data analysis, modeling, and insights reporting.
- delivered practical ML/DL lectures, blending theory with real-world applications.

Technical Skills

Languages & Libraries: Python, SQL, C++, Java, HTML, CSS, Pandas, NumPy, Matplotlib, Seaborn, OpenCV, PyTorch, TensorFlow, Scikit-learn, Hugging Face Transformers NLTK, SpaCy.

Classical NLP: Tokenization, POS tagging, NER, Sentiment Analysis, Text Classification, Topic Modeling.

Agents & Generative AI: Fine-tuning & evaluating Transformers (BERT, GPT-2, T5), Distilled Models, RAG, Agentic workflows, Prompt engineering, Function-calling, LLMOps, Multi-modal AI, Autonomous Agents, OpenAI SDK, CrewAI, AutoGen, MCP.

Projects & Applications: Brochure generator, Meeting summarizer from audio, Python-to-C++ translator, Airline support agent, RAG-powered knowledge systems, Price prediction, Deal-spotting agents, Career Digital Twin, SDR Agent, Deep Research, Stock Picker Agent, 4-Agent Engineering Team, Operator Agent, Agent Creator, Trading Floor with autonomous Agents.

MLOps & Deployment: MLflow, Docker, Streamlit, Git, REST APIs, FastAPI, Model tracking & versioning, Cloud (AWS, GCP).

Data Engineering & Analysis: ETL Pipelines, EDA, Feature Engineering, Time Series Forecasting, Clustering
Tools & Platforms: Jupyter, Google Colab, VS Code, Cursor, GitHub, Postman, Microsoft Power BI, PyQt6.
Concepts: Supervised/Unsupervised Learning, Deep Learning, Transformers, Transfer Learning, Model Evaluation.

Projects

AI Trading Floor: Multi-Agent Autonomous Trading System

- Technologies: OpenAI Agents SDK, MCP (Model Context Protocol), Playwright Browser Automation, SQLite, Python
- Developed multi-agent trading system with 4 autonomous agents collaborating via 6 MCP servers providing 44 specialized tools for market operations
- Implemented browser automation with Playwright to scrape and analyze real-time financial data, news sentiment, and market indicators
- Designed normalized SQLite schema with three core tables managing account portfolios, trading logs, and cached market data for optimal performance
- Integrated Pushover API for real-time push notifications on trades, portfolio updates, and system alerts with comprehensive logging and monitoring

AI-Powered Automated Brochure Generation Platform

- Technologies: Python, Gradio, BeautifulSoup4, OpenAI GPT-4o-mini, HTML/CSS.
- Designed an end-to-end intelligent system that scrapes corporate websites, analyzes content with LLMs, and generates fully structured marketing brochures.
- Achieved high-precision content extraction, real-time AI generation UX, and a production-ready pipeline with robust link detection and clean UI/UX design.

MLOps: House Prices Prediction With Automated Pipeline

- Technologies: Scikit-learn, XGBoost, Docker, CI/CD .
- Created end-to-end ML pipeline with automated preprocessing, reducing feature preparation time by 15%. Implemented ensemble approach achieving RMSE of 0.124, outperforming benchmarks by 12%
- Built model monitoring dashboard with automated retraining capability .
- Deployed as containerized microservice with robust CI/CD integration .

Classification: Customer Churn Prediction

- Technologies: Scikit-learn, SMOTE, Model Stacking
- Addressed class imbalance using SMOTE, improving recall by 25%
- Engineered 20+ domain-specific features capturing customer behavior patterns
- Implemented stacked ensemble achieving 92% F1-score, 20% better than previous solutions
- Solution reduced customer attrition by 15% when implemented by business team

Courses & Workshops

- AI Engineer Agentic Track: The Complete Agent & MCP Course, Udemy — 11/2025
- LLM Engineering: Master AI, Large Language Models & Agents, Udemy — 10/2025
- 2025 Fine Tuning LLM with Hugging Face Transformers for NLP, Udemy — 08/2025
- NLP - Natural Language Processing with Python, Udemy — 07/2025
- AI Programming With Python Nanodegree, Udacity — 11/2022
- Coding Competition, ICPC — 08/2022
- AI Session Lead, Assiut University — 03/2022
- SQL for Data Science, University of California Davis — 08/2021
- Data Visualization and Dashboards with Excel and Cognos, IBM — 05/2021
- Excel Basics for Data Analysis, IBM — 05/2021

Languages

- **Arabic:** Native.
- **English:** Proficient.