

Summary

Machine Learning Engineer with 6+ years of experience in developing, deploying, and optimizing AI models across various domains, including NLP, Computer Vision, and Fraud Detection. Proven ability to lead cross-functional teams in tackling complex engineering challenges, resulting in impactful AI-driven solutions. Strong foundation in mathematics, statistics, and programming, with extensive collaboration experience in academic research and teaching. Passionate about building scalable models while fostering innovation and driving team success.

Education

- **Helwan University** Cairo, Egypt
MSc in Computer Science, Faculty of Computers and AI Sep 2020 – Dec 2023
 - Key Courses: Artificial Intelligence, Algorithms, Advanced Software Engineering, Advanced Operating Systems, Computational Theory, Data Mining, Natural Language Processing.
- **Helwan University** Cairo, Egypt
BSc in Computer Science, Faculty of Computers and AI Sep 2012 – Jul 2016
 - GPA: 3.07/4.0
 - Key Courses: Software Engineering, Object-Oriented Software Development, Algorithms, Data Structures, Computer Architecture, Linear Algebra, Discrete Mathematics, Image Processing, Pattern Recognition.

Experience

- **Stream-kick AI – (part time)** Damietta, Egypt
ML Team Lead Mar 2025 – Present
 - Advanced computer vision algorithms analyze live match video to deliver precise.
 - AI-Powered Insights, meaningful player stats updated in real-time using state-of-the-art AI.
- **TachyHealth Inc.** Dubai, UAE (Remote)
Machine Learning Team Lead Jan 2020 – Present
 - Lead an ML team in developing AI solutions for fraud detection and healthcare.
 - Drive R&D in Generative AI, RAG, and LLMs, contributing to published research.
 - Oversee project management, ensuring AI strategies align with business objectives.
 - Engage with clients to define requirements and optimize AI implementation.
 - Establish MLOps best practices and streamline cloud-based ML deployment.

Senior Machine Learning Engineer
Jan 2020 – Dec 2022

 - Developed ML models for fraud detection and healthcare data processing.
 - Designed NLP and deep learning solutions for document automation and extraction.
- **Zayed University** Dubai, UAE (Remote)
Co-Principal Investigator (Co-PI) Sep 2022 – Oct 2024
 - Lead healthcare AI research, collaborating with academic and industry partners.
 - Developed GNN models for fraud detection.
- **King AbdulAziz University** Jeddah, SA (Remote)
Co-Secondary Investigator (Co-SI) Jul 2023 – Aug 2024
 - Contribute to interdisciplinary AI research and data-driven methodology development.
 - Developed ML models for 3D intraoral scan analysis, improving caries and restoration detection.

- **IT-Sharks** Cairo, Egypt
Machine Learning Instructor (Part-time) Aug 2024 – Dec 2024
 - Taught Bash scripting, Python (NumPy, pandas, matplotlib), and SQL for data analysis.
 - Instructed 35+ students in ML fundamentals and neural network training.
- **Brimore** Cairo, Egypt
Data Scientist Oct 2019 – Dec 2019
 - Analyzed customer purchasing trends to drive targeted marketing.
 - Developed predictive models for sales forecasting and inventory optimization.
- **Canadian International College (CIC)** Cairo, Egypt
Machine Learning Instructor Aug 2019 – Sep 2019
 - Trained 3rd and 4th-year students in ML applications using Python.
 - Designed hands-on curricula for final-year projects.
- **Freelance** Remote
Software Engineer & ML Consultant Sep 2016 – Present
 - Developed ML solutions for Saudi software firms.
 - Built A3maly project management system using .NET and SQL Server.

Skills

Machine Learning	Forecasting, Adversarial Training, Feature Engineering, Model Explainability, Hyperparameter Tuning
Deep Learning	PyTorch, TensorFlow, Keras, CNNs, RNNs, Transformers
Generative AI	Prompt Engineering, LLM Fine-Tuning, LangChain, LangGraph, RAG, OpenAI APIs, Vector DBs (FAISS, Chroma), Embeddings
NLP & CV	NER, Text Classification, Seq2Seq, Object Detection, Image Classification, OpenCV
MLOps	Docker, FastAPI, Flask, CI/CD, GitHub Actions, REST APIs, Model Serving, MLflow, W&B
Data & Coding	Python, SQL, Pandas, NumPy, Airflow, Spark (basic), OOP, Bash, Git
Cloud	AWS (EC2, S3, SageMaker), GCP (Vertex AI), Azure ML (basic)
Mathematics	Linear Algebra, Probability, Statistics, Optimization, Matrix Calculus
Soft Skills	Leadership, Mentorship, Communication, Problem Solving, Critical Thinking, Adaptability

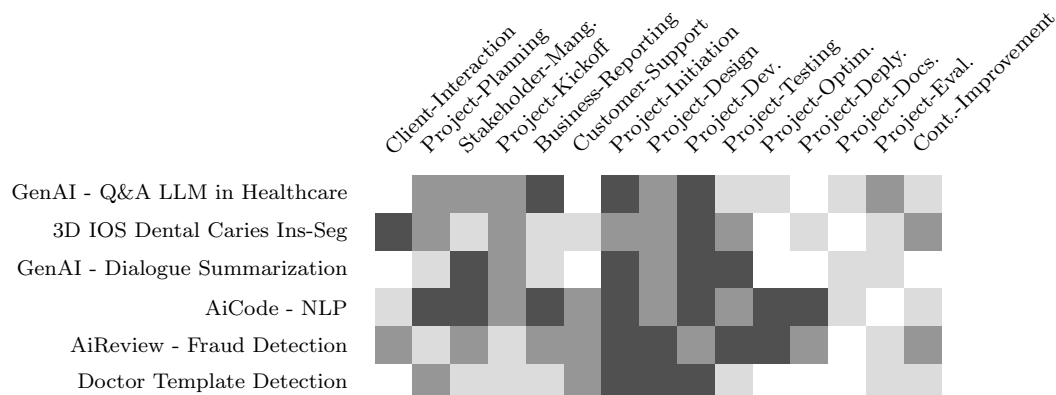
Awards and Recognition

- **Accelerator Program (Entrepreneurship)** Cairo, Egypt
Technology Innovation and Entrepreneurship Center (TIEC) Mar 2017 - May 2017
 - Selected for startup acceleration program covering business model development, market analysis, product development, and financial management.
- **2nd Place - Data Science Track** Cairo, Egypt
IbTIECar 2016 - Technology Innovation and Entrepreneurship Center Jun 2016 - Feb 2017
 - Awarded 2nd place for "CAD System for Medical Lab Investigation" project in national innovation competition.

Publications

- "Generative AI with Big Data for Better Detection of Fraud in Medical Claims," in *IEEE HealthCom*, Feb. 2025. Available: [Link](#)
- "GNN as Explainable Tool with Heterogeneous and Homogeneous Data for Medical Claim Validation," in *IEEE CINS*, Feb. 2025. Available: [Link](#)
- "Fraud Detection in Medical Insurance Claims Using Majority Voting of Multiple Unsupervised Algorithms," in *Procedia Computer Science*, vol. 244, pp. 9-22, Oct. 2024. Available: [Link](#)
- "GAN-GA: A Generative Model based on Genetic Algorithm for Medical Image Generation," in *Frontiers in Medical Technology*, Dec. 2023. Available: [Link](#)
- "Med-Flair: Medical Named Entity Recognition for Diseases and Medications based on Flair Embedding," in *AI in Computational Linguistics*, Elsevier, Jul. 2021. Available: [Link](#)
- "Efficient Classification Approach Based on COVID-19 CT Images Analysis with Deep Features," in *IEEE ICCICIS*, Feb. 2021. Available: [Link](#)
- "Computer-Aided Diagnosis System for Medical Laboratory Investigation," in *IUGRC, MTC Cairo*, Jul. 2016. Available: [Link](#)

Projects



- GenAI - Q&A LLM in Healthcare**
R&D *Nov 2023 - Present*
 - Description:** Question-answering system using generative AI for healthcare with 87% accuracy on medical queries.
 - Technologies:** PyTorch, Python, Transformers, HuggingFace
- 3D IOS Dental Caries Ins-Seg**
KAUST-Dental Center *Nov 2023 - Dec 2023*
 - Description:** Identifying and segmenting areas of tooth decay from 3D intraoral scans with 81% detection accuracy.
 - Technologies:** PyTorch, Python, PointCloud, IOS, Computer Vision
- GenAI - Dialogue Summarization**
R&D *Nov 2023 - Dec 2023*
 - Description:** LLM fine-tuning for dialogue summarization with 90% content retention using zero/one/few-shot techniques.
 - Technologies:** PyTorch, Python, Transformers, AWS S3, HuggingFace
- AiCode - NLP**
TachyHealth Inc. *Jan 2022 - Present*
 - Description:** AI-powered medical coding solution that automatically converts medical documents to appropriate coding outputs with 95% accuracy.
 - Technologies:** PyTorch, Python, tox, pytest, Language Models, Fine-tuning, FastAPI
- AiReview - Fraud Detection**
TachyHealth Inc. *Mar 2021 - Present*
 - Description:** AI-powered system for medical claims reviewing and auditing that reduces fraud by 40% through automated investigation.
 - Technologies:** PyTorch, Python, pytest, Dask-ml, PySpark, scikit-learn, pyod, FastAPI
- Doctor Template Detection**
TachyHealth Inc. *Jan 2024*
 - Description:** AI-powered template detection system that identifies similar medical documentation patterns with 85% accuracy.
 - Technologies:** Python, TF-IDF, Clustering

Certifications

- Generative AI with LLMs**
DeepLearning.AI *Coursera
Apr 2024 - May 2024*
- Machine Learning Operations (MLOps)**
Online Professional Development *Udemy
Jan 2022 - May 2022*
- Computer Vision Expert (Nanodegree Program)**
Online Professional Development *Udacity
Aug 2020 - Nov 2020*
- Machine Learning Engineer (Nanodegree Program)**
NTL Scholarship *Udacity
Jun 2019 - Dec 2019*
- Big Data Specialist with IBM BigInsights V2.1**
Professional Certification *IBM
Apr 2016*

Languages

Arabic: Native

English: Professional Working Proficiency (B2)