

Ziad Attia Gamal Elhafian

Artificial Intelligence Engineer

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PROFESSIONAL SUMMARY

Proficient and detail-oriented AI Engineer with strong foundational skills in machine learning, deep learning, and natural language processing. Experienced in developing AI-powered solutions with a focus on model interpretability and real-world impact. Skilled in building data-driven applications and applying core software engineering principles to AI workflows. Passionate about continuous learning and staying up to date with emerging technologies in the AI field. A fast learner and effective team collaborator, dedicated to delivering high-quality, meaningful results.

PROFESSIONAL EXPERIENCE

AI Engineer Trainee 02/2024 – 07/2024

Route

- Designed predictive models and visualizations using real-world datasets (Titanic, Loan, Sales)
- Conducted NLP-based sentiment analysis with LLMs and Hugging Face models
- Developed an OCR system for document classification using CNN-LSTM
- Delivered end-to-end AI pipelines with model tuning, evaluation, and explainability modules

Competitive Programming Trainee 11/2024 – 03/2025

ECPC (Egyptian Council for Programming Competitions)

Participated in training sessions to enhance problem-solving and algorithmic thinking skills. Practiced solving complex challenges and applied logic to efficiently tackle coding problems in preparation for competitive programming contests.

Shibin al Kawm,
Egypt

Full Stack Developer 01/2025 – 02/2025

Code Alpha

- Developed a social media platform with user interaction, profile management, and secure login
- Used ASP.NET MVC, JavaScript, and SQL Server for dynamic, scalable design

Full Stack Developer 08/2024 – 11/2024

Talent Academy

- Built HR and course platforms with authentication, reporting, and role management features
- Backend in ASP.NET Core with SQL Server, frontend using Bootstrap and jQuery
- Applied clean code practices and agile workflows

Shibin al Kawm,
Egypt

EDUCATION

Al Mai Secondary School 09/2024 – present

Shibin al Kawm,
Egypt

PROJECTS

Heart Disease Detection – ML Pipeline Using UCI Dataset [🔗](#)

Developed an advanced machine learning pipeline to predict heart disease using the UCI Heart Disease dataset. The project includes:

- **Data Acquisition:** Automated data loading using `ucimlrepo` to fetch the UCI dataset.
- **Preprocessing:** Handled missing values, normalized features using `StandardScaler`, and transformed data into a clean format.
- **Modeling:** Trained and evaluated multiple classifiers—Logistic Regression, Decision Tree, Random Forest, and SVM—using `scikit-learn` pipelines and grid search (`GridSearchCV`) for hyperparameter optimization.
- **Evaluation:** Assessed model performance with accuracy, precision, recall, F1-score, ROC-AUC, and confusion matrix. Visualized ROC curves and classification reports for in-depth analysis.
- **Clustering (Bonus Task):** Explored unsupervised learning with `KMeans` and `Agglomerative Clustering`, measuring performance using silhouette scores and adjusted Rand index.
- **Modularity & Reproducibility:** Used `Pipeline` and `ColumnTransformer` to ensure scalable, modular, and production-ready code architecture.

COVID-19 Detection – Deep CNN Classifier Using Chest X-ray Images [🔗](#)

Developed an advanced machine learning pipeline to predict heart disease using the UCI Heart Disease dataset. The project includes:

- **Data Acquisition:** Automated data loading using `ucimlrepo` to fetch the UCI dataset.
- **Preprocessing:** Handled missing values, normalized features using `StandardScaler`, and transformed data into a clean format.
- **Modeling:** Trained and evaluated multiple classifiers—Logistic Regression, Decision Tree, Random Forest, and SVM—using `scikit-learn` pipelines and grid search (`GridSearchCV`) for hyperparameter optimization.
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Emotion Recognition App [🔗](#)

Technologies: Python, Streamlit, DeepFace, OpenCV, NumPy, PIL

- Developed a web-based emotion recognition system using deep learning (`DeepFace`) to analyze emotions from images and videos.
- Built an interactive UI with `Streamlit` that allows users to upload media and visualize real-time emotion predictions.
- Implemented frame-by-frame video processing with `OpenCV` and `NumPy` for detecting dominant emotions efficiently.
- Packaged the app with modular code and professional documentation for open-source deployment.

Waste Classifier – Deep Learning Capstone [🔗](#)

Built a convolutional neural network (CNN) to automatically classify waste into categories (organic, recyclable, etc.) to support smart waste management.

- Used `TensorFlow` and `Keras` to design and train the model on a real-world waste image dataset.
- Achieved high accuracy in classifying multiple waste types.
- Applied data augmentation and preprocessing techniques to improve model generalization.
- Developed the solution as part of a deep learning capstone project to address environmental sustainability using AI.

Rainfall Prediction – Australian Weather Dataset

Built a machine learning model to predict the likelihood of rainfall the next day using real meteorological data from Australia.

- Explored and cleaned a large-scale weather dataset using Pandas and NumPy.
- Performed feature engineering and handled missing data for better model performance.
- Trained and evaluated multiple classifiers (Logistic Regression, Random Forest, etc.) using scikit-learn.
- Achieved strong predictive performance and evaluated models using accuracy, ROC AUC, and confusion matrix.

Titanic Survival Prediction – Machine Learning Model

Developed a predictive model to determine passenger survival on the Titanic using classification algorithms.

- Performed data preprocessing and exploratory data analysis (EDA) using Pandas, Seaborn, and Matplotlib.
- Trained multiple models including Logistic Regression, Decision Trees, and Random Forest.
- Evaluated model performance using accuracy and classification reports.
- Submitted results on Kaggle and practiced applying ML workflows on structured tabular data.

TECHNICAL SKILLS

Programming & AI Basics

- Python Programming (Data Structures, Functions, OOP)
- Git & GitHub, SQL, Shell Scripting
- Software Engineering Principles, Testing in Python
- Jupyter Notebook, Anaconda, VS Code, Debugging

Machine Learning

- Supervised Learning: Linear/Logistic Regression, Decision Trees, SVM, Random Forest
- Unsupervised Learning: K-Means, PCA
- Model Evaluation: Accuracy, Precision, Recall, F1, AUC
- Hyperparameter Tuning, Cross-Validation, Feature Engineering
- Time Series Forecasting, Data Preprocessing

Data Analysis & Visualization

- NumPy, Pandas (data wrangling & exploration)
- Matplotlib, Seaborn, Plotly (insightful visualizations)
- Linear Algebra, Statistics, Matrix Operations

Deep Learning & AI

- Neural Networks: ANN, CNN, RNN, Multi-Input Models
- Computer Vision & OCR, NLP (tokenization, transformers)

CERTIFICATIONS

ARTIFICIAL INTELLIGENCE ENGINEER 1

Coursera

Sprints x Microsoft Summer Camp - Ai and Machine Learning

Sprints

07/2025 – 07/2025

Advanced Deep Learning Specialist

Coursera

06/2025 – 06/2025

Deep Learning Essentials with Keras






Coursera

06/2025 – 06/2025

Machine Learning with Python (V2)

Coursera

05/2025 – 06/2025

Career Essentials in Data Analysis  <i>Microsoft & LinkedIn</i>	02/2025 – 02/2025
Python & AI Course Completion Certificate <i>Black Horse Courses</i>	02/2025 – 04/2025
Data Science & Analytics  <i>HP LIFE</i>	01/2025 – 01/2025
Introduction to Data Science  <i>Cisco Networking Academy</i>	01/2025 – 01/2025
Data Analysis with Python  <i>freeCodeCamp</i>	01/2025 – 01/2025
Data Fundamentals  <i>IBM SkillsBuild</i>	01/2025 – 01/2025

LANGUAGES

English Proficient	Arabic Native
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