

EZZAT ESAM ELSAYED

AI Engineer

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github.com/EzzatEsam October Gardens, 6th of October City, Giza, Egypt

EXPERIENCE

Software Developer - Full-time

VetSoft - Poultry Management Solutions

Nov 2024 - Present Nasr City, Cairo, Egypt

- Utilize cutting edge LLMs like **llama3.3**, **gemini 2** and **Deepseek** to provide functionalities and enhance user experience.
- Built an intelligent **chatbot user assistance system** leveraging **FastAPI**, **LangChain**, and **Langgraph** with vector database (**FAISS**) to provide seamless support to customers.
- Created pipelines allowing **AI agents** to analyze and interact with the company's **SQL Server database**, providing data analysis services. While ensuring secure and efficient data handling.

Intern, Using AI in Wireless Communications

Zewail City of Science and Technology

2023 (3 months) Giza, Egypt

- Developed a **machine learning** pipeline for predicting the QOS (quality of service) of a 5G mobile network using environmental variables (temperature, longitude, latitude) and RF measurements (RSRP, SNR, bandwidth).
- Trained the pipeline on the **Berlin V2X dataset** achieving **7.97 mbit/s RMSE** in predicting the QOS of the test split.
- The pipeline used **CatBoostRegressor**. And incorporated **feature engineering (one hot encoding, lag features)** and **hyperparameter tuning** to improve performance.

PROJECTS

League of Legends Assistant - A RAG Chatbot Full-Stack App

Python, LangChain, ChromaDB, FastAPI, SQLAlchemy, React.js, React Router

- Designed and deployed a **RAG** pipeline using **LangChain** and **ChromaDB**, integrating dynamic updates from League of Legends patch notes and guides to ensure real-time knowledge accuracy.
- Used **Gemini embedding** models and **ChromaDB** for data storage and retrieval.
- Deployed via **FastAPI** with **SQLAlchemy** for database management, providing chat history persistence.
- Built a responsive frontend with **React.js** and styled it with **TailwindCSS** for a polished look.

Game Recommendation System

Python, PySpark, SparkML, Word2Vec

- Created a game **recommendation system** utilizing a Steam reviews dataset with over 50,000 games and 41 million user reviews.
- Developed an embeddings generation pipeline using game tags and descriptions with the **Word2Vec** algorithm, including preprocessing steps such as **tokenization** and stop-words removal.
- Applied **Cosine-Similarity** to suggest games to users based on their preferred games.

DDPM for Image Generation: A From Scratch Implementation

python, PyTorch, torchvision

- Implemented the Denoising Diffusion Probabilistic Models (**DDPM**) (Ho, Jain, & Abbeel, 2020) algorithm for image generation from scratch using **PyTorch** and **torchvision**.
- Built a custom **UNet** architecture for the model with **self-attention** modules.
- Trained the model on the **CelebA(64x64)** and **FashionMNIST(32x32)** datasets and was able to generate moderate quality images.

Scene Classification Using HOG, Bag of Words, Kmeans, and SVM Algorithms

Python, Numpy, Scikit-learn

- Developed a scene classification pipeline by extracting **HOG features** and applying **Kmeans** clustering to create Bag of Words descriptors.
- Trained** and fine-tuned a **SVM** and **KNN** classifiers, achieving **75% test accuracy** in classifying 15 distinct scene classes (LSUN mini dataset).

EDUCATION

BS. Communications and Information Engineering

Zewail City of Science and Technology

2019 - 2024 Giza, Egypt

GPA: 3.61/4.00 (With Honors)

Coursework

Artificial Intelligence Machine Learning
Deep Learning Computer Vision
Linear & Nonlinear Programming
Big Data Analysis OOP & C++
Discrete Mathematics
Database Management Systems

SKILLS

Core Skills

Machine learning Deep learning
Computer vision Data analysis Visualization
Object detection ETL pipelines Git Linux

Programming Languages

Python C++ MATLAB Java

Data Science & Analytics

Numpy Pandas SQL Hadoop PySpark
Matplotlib Seaborn Plotly

AI/ML Frameworks & Tools

PyTorch TensorFlow Scikit-learn OpenCV
YOLO Langchain Langgraph

Deployment

FastAPI Flask Docker

BADGES AND AWARDS

Hacktrick 2024 - 1st Place Winner

Dell Technologies

2024 New Cairo, Egypt

- Competed as part of a 4-member team in Dell's 2024 hackathon and secured 1st place.
- Achieved the highest score among 70+ participating teams.
- Tackled challenges in **machine learning**, **computer vision**, **encryption**, and **problem-solving**.

Applied Data Science Lab badge

WorldQuant University

2023 Remote

- Completed eight applied data science projects involving data cleaning, exploration, ETL pipelines, machine learning models, and visualizations.