

# Osama Ali Shah (*Certified AI Engineer*)

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## Profile:

AI Engineer with expertise in **Machine learning, Deep learning, Computer Vision (Image & Video Analysis) and Generative AI (LLMs)**. Skilled in **data analysis, visualization, and model development** using tools like **NumPy, Pandas, OpenCV, TensorFlow, and PyTorch**. Experienced in building **LLM agents with LangChain, LangGraph, MCP** and deploying AI solutions with **Flask, FastAPI, and Streamlit**. Passionate about creating intelligent, scalable systems that solve real-world problems.

## Skills & Interest:

- **Data Analysis & Manipulation:** NumPy, Pandas
- **Data Visualization:** Matplotlib, Seaborn, Plotly
- **Generative AI / LLMs:** LangChain, LangGraph, MCP
- **Machine Learning:** scikit-learn, XGBoost, LightGBM
- **Deep Learning:** TensorFlow, Keras, PyTorch
- **Computer Vision:** OpenCV, CNNs, YOLO, Image Classification, Object Detection, Video Analysis
- **Web Development:** Flask, FastAPI, Streamlit
- **Web Scraping:** BeautifulSoup, Selenium, Requests, Apify
- **Automation & Workflow Orchestration:** n8n
- **Database & ORM:** SQLite, Postgres

## Professional Experience:

### *AI Engineer – SAT Impact Solutions*

OCT 2025 – Ongoing

- Develop and deploy AI and Machine Learning models for real-world applications.
- Work on Natural Language Processing (NLP) and Deep Learning projects.
- Perform data collection, preprocessing, and model evaluation.
- Integrate AI models into web-based systems and enterprise solutions.
- Collaborate with development teams to ensure efficient model deployment.
- Research and implement state-of-the-art AI techniques to improve system performance.

### *AI Engineer – AI Data House*

3 Months

- Developed and deployed **LLM-powered applications** for conversational AI, document analysis, and intelligent automation.
- Built **multi-agent systems** using LangChain and LangGraph to manage complex workflows and task orchestration.
- Designed and integrated **chatbots and custom AI agents** with advanced features such as PDF Q&A, resume analysis, and advisory conversations.
- Implemented **end-to-end AI pipelines**, from data processing and model integration to real-world deployment.
- Containerized and deployed AI solutions with **Docker**, ensuring scalability, portability, and efficient deployment workflows.

## Professional Projects:

### • **AI-Powered Smart Vending Machine**

Developed an intelligent vending machine that leverages Retrieval-Augmented Generation (RAG) to recommend protein supplements and vitamin products. The system activates through multimodal inputs such as face recognition, text, or voice commands, and provides personalized suggestions based on user

activity context like gym, running, or sports. A structured database of nutrition items was integrated to enable accurate and targeted health recommendations.

- **Podcast AI Agent Development**

Designed and deployed an intelligent system that processes **podcast transcripts** and leverages LLMs with **Retrieval-Augmented Generation (RAG)** to provide meaningful insights. The pipeline supported content analysis, automated question generation, and advisory-style interactions while ensuring alignment with the podcast's brand voice. This project demonstrated expertise in **LangChain, FAISS, and LLM fine-tuning**, delivering a scalable solution for knowledge-driven podcast engagement.

- **Multi-Agent Chatbot with LangGraph**

This project demonstrated the power of **multi-agent systems** by integrating multiple workflows into a single chatbot. The **LangGraph**-based architecture enabled users to chat naturally while accessing specialized agents for career counseling, resume evaluation, and document querying. By allowing PDF uploads and real-time Q&A, the system showcased how LLMs and LangGraph can be applied to create practical, user-focused AI assistants.

- **Website Chatbot**

Make a chatbot with direct connect to website database and website when user ask question the chatbot using sql agent and fetch the relevant documents from database if query id related to database and give answer to users but only limited information. if query about the website related so the chatbot answer from website. LLM fine tune only on question, answer from that website. Using LLM, SQL Agent, RAG etc.

- **Human Activity Recognition**

- Developed a CNN-LSTM-based computer vision system to recognize human activities from video data using spatial-temporal features.
- Implemented OpenCV and YOLO for real-time human detection and video-based activity analysis

- **AI Engine for Dental Disease Diagnosis**

Developed an AI-based diagnostic engine using a **Kaggle dataset** to detect dental diseases. The project involved preprocessing medical image data and designing a **Convolutional Neural Network (CNN)** capable of identifying and classifying dental conditions. The system was built to support faster and more accurate diagnosis, demonstrating the potential of deep learning in healthcare applications.

- **Career Counseling through Chatbot**

This project focused on combining **natural language processing** with **artificial neural networks** to deliver personalized career counseling. By analyzing student performance data, the model was able to suggest potential career directions, while the chatbot provided an interactive interface for real-time guidance. The system highlighted the practical use of AI in education and student support

#### **Education:**

Abdul Wali Khan University Mardan.

Sept 2021 – July 2025

- Degree: Bachelor of Science in Computer Science
- Current CGPA: 3.48/4.0

#### **Certifications:**

##### **Coursera (2022-2024):**

- Python for Data Science, AI &Development
- Machine Learning Specialization (3 courses)
- Deep Learning Specialization (5 courses)
- Natural Language Processing with Classification and Vector Spaces (4 courses)

##### **GreatLearning (2022-2023):**

- NumPy
- Pandas
- Matplotlib
- Seaborn
- SpaCy

##### **Udemy (2024-2025):**

- Complete Generative AI Course with LangChain & Hugging Face
- LangGraph
- Post Processing of LLMs
- Introduction to reinforcement Learning (HuggingFace)