

## Waris Hayat

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Kaggle: [Waris Hayat | Novice | Kaggle](#) • Hugging Face: [Waris01 \(Hayat\)](#)

### Education

#### Punjab College

ICS, Computer Science. GPA [710/1100 – 64%]

Relevant Coursework: Object-Oriented Programming (C++, Mathematics)

Islamabad, Pk

Graduation Date: 03-2020

#### Numl University

Software Engineering, GPA [3.01 out of 4.0 GPA]

Relevant Coursework: DSA, OOP (C++, Java, Python), Statistics & Mathematics, Machine Learning, System Design

Islamabad, Pk

Graduation Date: 02-2026

### Projects

#### Sentiment Analysis App

- Developed a real-time sentiment analysis web application using Streamlit, allowing users to classify tweets as positive or negative.
- Built a machine learning model with TensorFlow/Keras, leveraging NLTK for text preprocessing (tokenization, stemming, stopword removal).
- Implemented Pickle to load pre-trained models and tokenizers, enabling fast and efficient sentiment classification.
- Streamlined installation and usage with clear setup instructions and dependencies (Streamlit, TensorFlow, NLTK).

#### Qlora-Peft-LLMs-Prompt-Generation

- Developed a prompt generation system using the Qlora method and PEFT (Parameter-Efficient Fine Tuning) with the TinyLlama model, optimized for efficient computation.
- Implemented model training and prompt generation in both Kaggle and Google Colab notebooks, enabling easy accessibility and execution.
- Integrated TensorBoard for model performance visualization, including metrics for efficient prompt generation.
- Configured model with BitsAndBytesConfig for 8-bit optimization, improving computational efficiency and reducing memory usage.

#### PDF Question Answering (RAG) App Chatbot

- Developed a PDF Question Answering web app using LangChain, Google Generative AI, and FAISS for document retrieval and intelligent query responses.
- Implemented text extraction from PDFs and integrated Retrieval-Augmented Generation (RAG) for accurate, context-aware answers.
- Designed a Streamlit-based user interface for seamless PDF upload, question submission, and result retrieval with adjustable temperature for response variation.
- Configured Google API and utilized Python libraries like sentence-transformers, langchain\_faiss, and pypdf for efficient processing and querying.

#### Multi-Agent State-Driven Chatbot

- Designed and developed a state-driven chatbot framework leveraging a directed acyclic graph (DAG) to efficiently manage dynamic conversation flows and integrate external tools and APIs.
- Implemented context-aware conversation management using a Large Language Model (LLM), with conditional flow control to adapt responses based on real-time user inputs.
- Utilized for building and maintaining a flexible state graph, enabling seamless communication between chatbot components, and visualized the flow with Mermaid for clear architectural insights.
- Enabled dynamic tool interaction within the conversation through IPython, providing an interactive, adaptable environment for advanced chatbot functionalities in Jupyter Notebooks.

## Waris Hayat

### AI-Powered SQL Query Generator using LangChain

- Developed an interactive Streamlit application that generates SQL queries from natural language input using LangChain and Google's Generative AI model.
- Implemented real-time SQL query generation based on user inputs, allowing seamless communication between the user and the AI model.
- Enabled customizable query building with predefined examples, providing users with accurate, context-aware SQL queries.
- Integrated Docker for easy deployment, allowing users to run the chatbot on any environment with containerized support.

### Face Mask Detection with OpenCV and CNN

- Developed a face mask detection system using a Convolutional Neural Network (CNN) based on the pre-trained VGG16 model to classify images as "mask" or "no mask".
- Integrated OpenCV for real-time face detection using Haar Cascade classifiers to detect faces in live video streams. Achieved approximately 90% accuracy after training the model on a Kaggle dataset with images of individuals wearing masks and without masks.
- Created Python-based scripts for training the model and deploying the detection system for real-time mask identification.

### Driver Drowsiness Detection AI and IOT Base (FYP-Project)

- Developed an IoT-based driver drowsiness detection system using computer vision and deep learning to monitor fatigue and improve road safety.
- Integrated real-time alerts (visual and tactile) for drivers, targeting commercial fleet management and ADAS to reduce fatigue-related accidents.

## Leadership & Activities

### Microsoft

remote

#### Microsoft Learn Student Ambassador

- Engaged in community outreach and organized technical events to promote Microsoft technologies and foster knowledge-sharing among students.
- Actively participated in Microsoft Learn initiatives, assisting students with resources and learning paths to improve their technical skills.
- Represented Microsoft in various student-focused forums and provided insights into emerging technologies like Power Platform, and GitHub.

## Skills & Interests

**Languages:** Python, Java, C++, HTML/CSS, Bootstrap.

**Data Analysis:** NumPy, Pandas, SQL, Excel.

**Visualization:** Matplotlib, Seaborn, Plotly.

**Machine Learning:** TensorFlow, Keras, Scikit-learn, PyTorch, Transfer Learning, LLM's, LangChain, LangGraph.

**NLP:** NLTK, Hugging Face, SpaCy.

**Web Framework:** Flask (Basic), Streamlit.

**Tools:** Docker, JIRA, Scrum, Git/GitHub.

**Language:** English, Urdu, Punjabi

**Interests:** Interested in Data Science and AI, exploring machine learning algorithms, working on real-world AI projects, attending tech meetups, and contributing to AI open-source projects.