Muhammad Usman

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Education

Sukkur IBA University Expected Sept 2026
Bachelor of Engineering in Computer Systems (GPA: 3.46 / 4.00) *Sukkur, Pakistan*

Technical Skills

Programming Languages: Python, C++, C, JavaScript, Java, Embedded C, MATLAB
Tools & Technologies: TensorFlow, Scikit-learn, PyTorch, Hugging Face, LangChain, Git, GitHub, MySQL, NumPy, Pandas, Matplotlib, Seaborn, OpenCV, Remote-XY, Blynk, Arduino IDE, NI Multisim, Jupyter Notebook

Experience

Code Gradients July 2025 - Aug 2025
Python Intern (On-site) *Sadiqabad, Pakistan*

- Collaborated on real-world Python projects involving data manipulation, automation, and API integration, enhancing backend functionality.
- Developed and optimized Python scripts to streamline internal workflows, improving code efficiency and maintainability.
- Gained hands-on experience in version control (Git), debugging techniques, and writing clean, modular code following industry best practices.

DevelopersHub Corporation© June 2025 - July 2025
AI/ML Engineering Intern (Remote) *Islamabad, Pakistan*

- Designed and deployed advanced AI/ML solutions including chatbots using LLMs (Mistral, DistilGPT2), a regression model for house price prediction, and a customer churn prediction pipeline with Scikit-learn and GridSearchCV.
- Implemented context-aware RAG chatbot architecture with LangChain, FAISS vector store, and Falcon-RW-1B model, demonstrating practical expertise in Retrieval-Augmented Generation and conversational memory handling.
- Applied prompt engineering and NLP techniques to build zero-shot and few-shot support ticket auto-tagging systems, emphasizing real-world application of LLMs, data preprocessing, and model evaluation.

Elevvo Pathways July 2025 - Aug 2025
Machine Learning Intern (Remote) *Cairo, Egypt*

- Developed ML models for regression, classification, clustering, and recommendation tasks using Scikit-learn, Pandas, and Python.
- Completed hands-on projects like loan approval prediction, customer segmentation, and movie recommendation.
- Applied deep learning (CNNs) for image and audio classification using TensorFlow and Keras.

TechnoHacks EduTech Official Mar 2025 - Apr 2025
Machine Learning Intern (Remote) *Maharashtra, India*

- Applied data cleaning, EDA, and feature engineering techniques to real-world datasets using Python, Pandas, and Seaborn.
- Built and evaluated machine learning models including linear regression, decision trees, and K-Means clustering using Scikit-learn.
- Developed a predictive tool to classify diabetes risk in patients, enhancing model accuracy through hyperparameter tuning and metric analysis.

Skillify Zone July 2025
Machine Learning Intern (Remote) *Peshawar, Pakistan*

- Gained hands-on experience in data preprocessing, visualization, supervised and unsupervised machine learning using real-world datasets.
- Built and deployed ML models using Python, Scikit-learn, Pandas, Matplotlib, and Streamlit for practical problem-solving.

Projects

U-Care Bot: Friendly Health Query Chatbot (*Python, Streamlit, OpenRouter API, Large Language Model***)**

- Developed a user-friendly AI health chatbot that provides general medical guidance using the Mistral-7B-Instruct model, with safety-focused prompt engineering and keyword filtering to prevent misuse.
- Designed a modern, engaging interface using Streamlit and custom CSS, featuring animated visuals, styled chat bubbles, and conversation history for a smooth user experience.
- Integrated safety mechanisms to detect sensitive terms (e.g., "suicide", "heart attack") and redirect users to seek professional help, ensuring ethical and responsible AI usage.

EmpathyBot: A Humble ChatBot (*Python, HuggingFace Transformers, LLMs, Command Line Interface)*

- Fine-tuned a distilled LLM on the EmpatheticDialogues dataset to craft emotionally intelligent responses, enhancing user experience through context-aware interactions.
- Engineered a lightweight, CLI-based chatbot that maintains conversational empathy using controlled generation techniques like top-k sampling, temperature tuning, and no-repeat n-grams.
- Applied prompt preprocessing, tokenization strategies, and checkpoint-based model management for reproducible and coherent language generation.

Context-Aware ChatBot | *Langchain, Retrieval-Augmented Generation, FIASS, Local LLM, Streamlit*

- Built a modular, context-aware chatbot integrating a local LLM with RAG architecture for intelligent, knowledge-driven conversations.
- Implemented document chunking and embedding storage using FAISS for efficient semantic retrieval from a custom knowledge base.
- Deployed a user-friendly web interface via Streamlit, preserving conversation history and enhancing response relevance using LangChain's memory modules.

Diabetes Prediction Web App | *Streamlit, Scikit-learn, SVM, StandardScalar, PIMA Indian diabetes dataset*

- Developed a lightweight yet impactful web-based diagnostic tool to predict diabetes using key medical parameters.
- Engineered with a Support Vector Machine (SVM) model and StandardScaler for feature scaling, achieving an 82% accuracy on the Pima Indians dataset.
- Designed an intuitive Streamlit interface for real-time input of clinical data and instant predictive results—"Diabetes Detected" or "No Diabetes Detected."
- Ensured modularity and scalability through efficient use of model persistence (model.pkl, scaler.pkl) and professional Python project structuring.

Anti-Sleep Glasses | *Arduino Nano, IR Sensor, Buzzer Module, Embedded C, Real-Time Alert System*

- Designed a wearable alert system that detects eye closure using an IR sensor and triggers a buzzer to prevent sleep during critical tasks.
- Programmed on Arduino Nano using Embedded C for real-time response and low power consumption.
- Built with a focus on portability and modularity, making it ideal for drivers, machine operators, or students during study sessions.

OPTIMA OS: A mini-Operating System| *C, FCFS Scheduling, Mutex Locks, Shared Memory, CLI (Windows API)*

- Developed a mini operating system featuring core components: process management, memory allocation, file system handling, and user I/O.
- Implemented First Come First Serve (FCFS) scheduling, mutex-based synchronization, and shared memory for interprocess communication in C.
- Built a command-line interface (CLI) using Windows system calls to simulate OS-level operations like launching apps, displaying specs, and shutdown functions.

Speech-to-Text Converter | *Python, SpeechRecognition, Google Web Speech API*

- Developed a real-time speech recognition system that captures microphone input and transcribes spoken words into text using cloud-based NLP services.
- Integrated adaptive ambient noise handling, multi-speaker support, and customizable language settings for broader accessibility and accuracy.
- Implemented robust error handling to ensure reliability, with clear feedback mechanisms for unrecognized speech or API issues.

Certifications

Introduction to Quantum Computing | *LinkedIn Learning*

Prompt Engineering| *LinkedIn Learning*