RAZ MUHAMMAD

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EDUCATION

Bachelor of Science in Computer Science

University of Agriculture Peshawar

2021 – Present (8th Semester)

CERTIFICATIONS

- Python Basics; Functions, Files, and Dictionaries; Data Collection and Preprocessing with Python – *University of Michigan on Coursera*
- IBM Data Science Professional Certificate – *IBM on Coursera*
- Data Science Bootcamp – *atomcamp*
- AI Bootcamp – *atomcamp*
- GenAI Training – *Pak Angels*
- Machine Learning Specialization – *DeepLearning.AI on Coursera*
- Neural Network and Deep Learning;
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization;
- Structuring Machine Learning Projects;
- Convolutional Neural Networks – *DeepLearning.AI on Coursera*
- Generative AI and LLMs: Architecture and Data Preparation –*IBM on Coursera*

SKILLS

Programming & Tools:

- **Languages:** Python, C++, JavaScript,Java, Kotlin, SQL
- **Data Science:** Pandas, NumPy, Matplotlib, Seaborn, Jupyter Notebook, MS Excel, Power BI
- **Machine Learning:** Scikit-Learn, Regression & Classification Models, Feature Engineering, Hyperparameter Tuning
- **Deep Learning:** PyTorch, TensorFlow, Keras, CNN, RNN, LSTM, Transfer Learning, Image Data Processing
- **Generative AI & LLMs:** Hugging Face, Groq API, Whisper (Speech-to-Text), Text Summarization, Translation Models,Transformer, PEFT, LoRA ,RAG, LangChain
- **Frameworks & Libraries:** Flask, Streamlit, Gradio

- **Web & Front-End:** HTML, CSS, JavaScript
- **Cloud Platforms:** Streamlit Cloud, Hugging Face Spaces

PROJECTS

- **LLM Fine-tuning Project:**
  Fine-tuned Llama-2-7b using Parameter Efficient Fine-Tuning (PEFT) with LoRA adaptation and 4-bit quantization, significantly optimizing training efficiency.
- **Sentiment Classifier using CNN and RNN:**
  Implemented a deep learning-based sentiment analysis system using PyTorch, integrating pre-trained Word2Vec embeddings for text classification.
- **Neural Style Transfer Project:**
  Engineered an AI-powered application that fuses artistic styles with content images via Neural Style Transfer and VGG19.
- **Face Recognition System:**
  Created a facial recognition system leveraging the FaceNet architecture and triplet loss, supporting one-shot learning for robust verification.
- **Image Segmentation with U-Net:**
  Developed a semantic segmentation model for autonomous vehicles using a U-Net architecture with 23 distinct classes.
- **YOLO Object Detection:**
  Implemented a real-time vehicle detection system using YOLO architecture in TensorFlow, incorporating custom non-max suppression algorithms.
- **Skin Cancer Classification Using CNN:**
  Developed a transfer learning-based model for skin cancer detection using the ISIC 2019 dataset.
- **Weather Type Classification:**
  Created a CNN model to classify weather conditions (e.g., rainy, cloudy, sunny).
- **Alpaca Not Alpaca Classification:**
  Built an image classifier with MobileNetV2 in TensorFlow, achieving 98% validation accuracy through data augmentation and fine-tuning.
- **PDF Document Summarizer**
  Developed an AI-driven document summarizer that extracts text from PDFs, summarizes the main topics, and defines technical terms. Used Groq API and Hugging Face for model integration.
  Tools: Hugging Face, Groq API
- **Language Translator (Urdu ↔ English)**
  Built a translation application using a pre-trained Hugging Face model, supporting English-Urdu and Urdu-English translations.
- **Voice-to-Voice AI Chatbot**
  Created a real-time voice chatbot using Whisper for speech-to-text transcription and an LLM for

conversational AI. The system converts the output text back to voice for seamless interaction using tts model.

- **Career Assistant**
  Developed an AI-powered assistant to provide career advice, resume feedback, and job suggestions using LLM-based conversational intelligence.
- **Chat with LLM for Document Interaction**
  Built a Retrieval-Augmented Generation (RAG) system allowing users to upload PDFs and interact with the content through a chatbot. The system retrieves relevant information and answers questions based on the document.