

Muhammad Hamza Azhar

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EDUCATION

Pakistan Institute of Engineering and Applied Sciences

Bachelor of Science in Computer Science, GPA: 3.76/4.00

Sept 2021 – June 2025

Islamabad, Pakistan

SKILLS & INTERESTS

Python, Machine/Deep Learning, Generative AI, TensorFlow, PyTorch, Langchain, Data Preprocessing, Data Visualization, Image Processing, Computer Vision, NLP, Neural Networks, Classification, MERN stack, FastAPI, Cloud Computing

PROJECTS

Skintegrity – DNN based DeepFake Video Detection using Multi-Modality Features [\[LIVE DEMO\]](#)

- Developed a deepfake video detection system leveraging Optical and Transdermal Optical Imaging (TOI) features.
- Designed a TOI feature extraction pipeline, generating hemoglobin concentration heatmaps (visualizing blood flow) to detect deepfakes.
- Implemented detection pipeline using insights from the ICCV paper “TALL: Thumbnail Layout for Deepfake Video Detection.”
- Utilized transformer-based architectures, including Convolutional Vision Transformer, Swin, TimeSFormer.
- Deployed the trained model as a real-time web app for seamless deepfake video classification.

Food Visionary – Advanced Food Classification System [\[LIVE DEMO\]](#)

- Developed a deep learning-based food classifier for multi-category identification with high accuracy.
- Implemented a custom CNN and fine-tuned pre-trained models for feature extraction and classification.
- Designed an end-to-end pipeline for image preprocessing, augmentation and real-time inference.
- Optimized training with parallelized data loading, mixed precision, learning rate scheduling, and regularization for faster convergence.

Disaster Tweets Classification using Deep Learning

- Implemented a binary classification system to detect disaster-related tweets using a labeled dataset.
- Built and evaluated multiple models including Naive Bayes, Dense Neural Network, LSTM, GRU, Bidirectional-LSTM, 1D CNN, and TensorFlow Hub-based models.
- Achieved performance benchmarking across models using accuracy, precision, recall, and F1-score metrics.
- Fine-tuned a pretrained TensorFlow Hub model and experimented with reduced data training (10%) to test model generalizability.
- Applied text preprocessing techniques including tokenization, padding, stemming, and stopword removal for optimal input pipeline.

EXPERIENCE

National Centre for Physics, AiTeC

AI Intern

June 2025 – Present

Islamabad, Pakistan

Profile Analyzer – Agentic AI Conversation Starter | LangChain, Streamlit, LangSmith [\[LIVE DEMO\]](#)

- Designed and implemented a multi-agent pipeline to scrapes LinkedIn & Twitter to generate professional summaries and social insights.
- Suggests interesting facts and ice-breakers to start meaningful conversations.
- Uses Proxycurl & Tweepy APIs with mock fallback for public demo access + DeepSeek R1 model via OpenRouter.

LangBot – LangChain Documentation Assistant | LangChain, Pinecone, BAAI embeddings [\[LIVE DEMO\]](#)

- Implemented a recursive “level-2” chunking strategy (can be changed to “level-5” agentic chunking) to split and index LangChain docs for optimal context relevance.
- Built query augmentation logic that retrieves top-K relevant chunks, appends them to the user prompt, and routes the combined context to LLM for accurate, source-grounded answers.

- Tuned embedding similarity thresholds and retrieval parameters to achieve 90%+ user satisfaction in internal testing, reducing irrelevant context noise.

EGeeks Global

July 2025 – Present

AI Intern

Rawalpindi, Pakistan

Live Portrait – Real Time Streaming of Avatar, TTS-LipSync

- **Approach 1:** User uploads an audio sample, video, and text. The system cloned their voice, converted text to speech, and generated a lip-synced video, but experienced high latency as a new video was rendered each time.
- **Approach 2:** Optimized the system for real-time responses using streaming. Users uploaded an avatar once, and the avatar instantly spoke any text input like a virtual clone without repeated rendering delays.

LEADERSHIP & AWARDS

- Received a Certificate of Appreciation for outstanding leadership in a technical course project.
- Awarded a merit-based scholarship for two years in college for academic excellence.