Muhammad Arsalan Azhar

Date of birth: 25 Jun 2003

Nationality: Pakistani

CONTACT

arsalanazhar2003@gmail.com

(+92) 3115025335

https://www.linkedin.com/in/arsalanazhar

https://github.com/Arsalan-Azhar-AI **(Github)**

https://www.kaggle.com/arsalankag **(Kaggle)**

ABOUT

Short Summary

Highly motivated and research-driven Computer Science undergraduate with a solid foundation in machine learning, deep learning, and MLOps. *Complete d 15+ AI projects*, spanning model development, optimization, and deployment, with hands-on experience in building cloud-based solutions and implementing CI/CD pipelines. ***Actively involved in undergraduate research focusing on multi-modal AI systems and computer vision.*** Passionate about advancing the frontiers of intelligent systems and eager to pursue a fully funded MS in Computer Science to contribute impactful research to the AI community.

RESEARCH INTERESTS

Fields of Interest

- Deep Learning architectures for Computer Vision and Object Detection tasks
- Natural Language Processing techniques for Sentiment Analysis and Text Classification
- Application of Machine Learning models in real-world domains such as Healthcare and Social Media
- Optimization of neural networks through Transfer Learning and Fine-tuning
- Development and deployment of scalable AI systems for practical use-cases

EDUCATION AND TRAINING

15 SEP 2021 – 24 JUN 2025 Haripur, Pakistan

Bachelor of Science in Computer Science University of Haripur

Data Structures and Algorithms, Object-Oriented Programming, Database Management Systems, Operating Systems, Artificial Intelligence, Machine Learning, Deep Learning, Cloud Computing, Computer Networks, Big Data Analytics, Analysis of Algorithms, Finite Automata, Assembly Language, and Software Engineering.

Website https://www.uoh.edu.pk | **Final grade** 3.2 | **Thesis** Multi-Modal AI System for Identity Recognition and Pakistani Sign Language Detection

15 AUG 2019 – 15 JUL 2021 Hassan Abdal, Pakistan

Intermediate (F.Sc.) GBHSS Hassan Abdal

Final grade 1039/1100 (94%)

1 APR 2017 – 25 MAR 2019

Matriculation (Science) GBHSS Hassan Abdal

Final grade 912/1100 (83%)

RESEARCH EXPERIENCE

Multi-Modal AI System for Identity Recognition and Pakistani Sign Language Detection

Undergraduate Research Project — University of Haripur
Role: Independent Researcher | Supervisor: Mrs. Rubab Wafa

Proposed, designed, and implemented a real-time Pakistani Sign Language (PSL) recognition system focused on semantic-level gesture detection, going beyond isolated alphabets.
Employed YOLOv8 for recognizing 13 commonly used PSL signs (e.g., “rest,” “male,” “practice”) using a custom dataset of 5,000+ annotated images sourced from Roboflow Universe.

Integrated MediaPipe Hands for 21-point landmark tracking to enhance precision in gesture understanding.

Developed a facial verification module using VGG16 and transfer learning to authenticate users before gesture recognition, ensuring secure system access.

Achieved a first-of-its-kind implementation in Pakistan combining gesture recognition and biometric facial verification in a unified, real-time system.
Tools & Technologies: Python, YOLOv8, OpenCV, TensorFlow, Keras, MediaPipe, VGG16, Roboflow, Transfer Learning

Manuscript under preparation for publication (2025)

SKILLS

Programming Languages: Python, C++, Java, PHP, JavaScript | Web Development: HTML, CSS, Bootstrap, SQL | ML/DL Libraries & Frameworks: TensorFlow, Keras, Numpy, Pandas, Scikit-learn | LLMs & NLP Tools: LangChain, Hugging Face Transformers, DeepSeek-R1, LLaMA3 (Groq), XLM-RoBERTa | Vector Databases: FAISS, Pinecone, Chroma | Tools & Platforms: Docker, MLflow, Roboflow, AWS, Git, GitHub Actions, Streamlit | Other Skills: Data Preprocessing, Model Deployment, EDA, CI/CD Pipelines

PROJECTS

End-to-End Gender Classification Project

Developed an end-to-end Gender Classification Project with modular coding, pipeline creation, and deployment using Docker and CI/CD workflows on AWS.

Link https://github.com/Arsalan-Azhar-AI/End-to-End-Gender-Classification-project

Object Detection system for Pakistani Sign Language using YOLOv5

Sourced video data from Kaggle, extracted frames, and annotated images using Roboflow. Trained a YOLOv5 model in a modular coding framework to accurately detect and classify Pakistani Sign Language gestures

Link https://github.com/Arsalan-Azhar-AI/End-to-end-object-detection-project

Intelligent Multi-Tool Agent for Urdu and Academic Queries

Developed an AI agent system capable of handling multilingual and academic queries using LangChain Agents and multiple LLMs. Utilized Groq's LLaMA3 for English, XLM-RoBERTa for Urdu NLP, and Arxiv tools for academic search.

Link https://github.com/Arsalan-Azhar-AI/Langchain-Projects/tree/main/Agents

RAG App for UOH Website using LangChain, DeepSeek-R1, and FAISS

Built a Retrieval-Augmented Generation (RAG) chatbot that answers queries related to the University of Haripur website using LangChain and DeepSeek-R1. Leveraged FAISS for vector-based search, Hugging Face embeddings for semantic understanding, and Streamlit for the frontend interface.

Link https://github.com/Arsalan-Azhar-AI/Langchain-Projects/tree/main/RAG

Sentiment Analysis on Tweets

Preprocessed text data using NLP techniques (stemming, tokenization). Implemented a logistic regression model to classify tweets as positive or negative.

Link https://github.com/Arsalan-Azhar-AI/Tweet-Sentiment-Analysis

HONOURS AND AWARDS

1 SEP 2021 Punjab Educational Endowment Fund (PEEF)

Academic Awards

PEEF Scholarship Recipient (All Semesters of BS Program)
Awarded by the Punjab Educational Endowment Fund for securing top position during FSc at college level, maintained throughout the Bachelor's studies at the University of Haripur.

VOLUNTEERING

Undergraduate Researcher Leader

Multi-Modal AI System for Pakistan Sign Language Detection

Conducted research on building an AI-driven system to detect and interpret Pakistan Sign Language using multi-modal deep learning techniques. Currently in the process of preparing the research paper for publication.

Final Year Project Leader

"Energy Optimization in Smart Cities with ML and Edge-Cloud Computing" (2025)
Led a team-based project addressing energy efficiency in smart cities through machine learning models integrated with edge-cloud infrastructure. Oversaw planning, team coordination, and system development.