Omar Baig

+92 334 0101065 — omarbaig8070@gmail.com — linkedin.com/in/omar-baig-b14a372b1

Summary

AI Engineer & Researcher with expertise in Generative AI, LLM-based agents, federated learning, and computer vision. Experience in building scalable AI systems including RAG pipelines, multimodal medical AI frameworks, recommendation systems, and intelligent automation tools. Strong background in healthcare AI, personalization, and privacy-preserving machine learning with research contributions under peer review at leading venues.

Skills Summary

Core Concepts: LLMs, NLP, Machine Learning, Deep Learning, Federated Learning, Generative AI, RAG Systems, Computer Vision, Recommendation Systems

Programming Languages: Python, JavaScript, C#, C++, SQL

Frameworks & Libraries: TensorFlow, Scikit-learn, HuggingFace, OpenCV, LangChain, LangGraph, Pinecone, FastAPI, Flask

Deployment: Docker, VPS Deployment, Github Pages

Work Experience

Fiverr (Level 1 Seller)

Freelance AI & Machine Learning Engineer — *Oct 2025 – Present*

- Delivered 10+ AI/ML projects including full-stack RAG-powered systems with FastAPI backend, React frontend, MongoDB, and VPS deployment.
- Built adaptive LLM-integrated databases for intelligent querying and automated decision support systems.
- Performed large-scale data analysis, trained and optimized ML models, and integrated generative AI solutions for real-world applications.

Xavor Corporation — **Lahore, Pakistan**

Generative AI Intern — *Jun 2024 – Aug 2024*

- Led collaboration with developers and medical professionals to build an intelligent mobility assessment chatbot automating Functional Reach Tests using OpenCV and MediaPipe (95% accuracy).
- Engineered real-time pose estimation system achieving 90% validated measurement accuracy using geometric modeling techniques.
- Secured 1st position among 10+ competing teams.

Projects

AiroDx: Federated Explainable AI for Multimodal Respiratory Diagnosis — *Oct 2025 – Present*

- Developing a multimodal AI framework integrating chest X-rays and clinical data for respiratory disease diagnosis.
- Implementing Grad-CAM and SHAP for explainable X-ray interpretation.
- Applying federated learning on datasets such as PadChest for privacy-preserving collaborative training.
- Bachelor's Thesis Project.

Preference-Aware LLM Agents via Hierarchical Graphs and Federated Adaptation — *Jun 2025 – Oct 2025*

- Designed hierarchical graph-based preference modeling achieving 88% alignment and F1 0.93 over vector-only baselines.
- Implemented modular LoRA adaptation with dynamic routing (86% adapter selection accuracy).
- Integrated federated continual learning achieving 11% higher coverage with 77–78% end-to-end accuracy.
- Submitted to ICML 2026 (Under Review).

RAG-Powered Medical Report Interpreter — *Feb 2025 – Apr 2025*

- Built scalable FastAPI + React platform combining OCR, RAG retrieval, and LLM reasoning.
- Constructed curated medical knowledge base with vector embeddings.
- Generated both clinician-level and patient-friendly explanations with trend analysis.

Zero Trust Security in AI-Driven Healthcare Systems — *Apr 2025 – May 2025*

- Developed secure AI backends for disease prediction (90%+ accuracy).
- Ensured model integrity using SHA-256 hashing.
- Reduced simulated DoS attack success rate by 95%.

Hybrid Movie Recommendation System — *Nov 2024 – Jan 2025*

- Built hybrid recommender combining all-MiniLM-L6-v2 embeddings with Neural Collaborative Filtering.
- Evaluated on 2.5M interaction dataset achieving RMSE 1.08, Precision 0.80, MAP 0.61.
- Addressed cold-start via hybrid filtering strategies.
- Manuscript under review.

Education

University of Engineering and Technology, Lahore
Bachelor of Science in Computer Science *Dec 2022 – Jun 2026*
CGPA: 3.52
Thesis: AiroDx — Federated Context-Aware Explainable AI Framework for Multimodal Differential Diagnosis of Respiratory Diseases

Publications

2026: Baig, O., Zafar, A., Ali, H., & Ali, A. Preference-Aware LLM Agents using Hierarchical Graphs and Federated Adaptation. *International Conference on Machine Learning (ICML)* (Under Review).

2025: Ali, S., Ali, D., Baig, O., & Ali, S. A Novel Ensemble Learning Approach for Early Detection of Sepsis in the ICU. *Computer Methods and Programs in Biomedicine* (Elsevier, Under Review).

Certifications

Specialization in Machine Learning – DeepLearning.ai and Stanford University (Coursera)

Oracle Cloud Infrastructure 2024 Generative AI Certified Professional

Oracle Cloud Infrastructure 2025 Data Science Certified Professional

Neural Networks and Deep Learning – DeepLearning.ai