

Hamza Asad

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SUMMARY

Data Science graduate from FAST NUCES with experience in computer vision, spatio-temporal modeling, research, and agentic AI systems. Proven in building end-to-end AI/ML pipelines from model training to production deployment, with hands-on experience in scalable data processing, workflow orchestration, and real-time analytical systems.

WORK EXPERIENCE

Associate Data Engineer

Sep '26 — Present

AdLabs Solutions — Islamabad

- Audit and maintain ETL pipelines to ensure reliable, accurate data processing across production workflows.
- Process and transform data feeding into enterprise data warehouses to support downstream analytics and reporting.

Research Assistant

Aug '25 — May '26

Knowledge Data & Discovery Lab — Islamabad

- Worked on an intelligent flare-up monitoring, prediction, and alert system for arthritis and related joint conditions as part of a final-year project.
- Developed components for monitoring patient symptoms and predicting potential flare-ups using multimodal health data.

Research Assistant

Aug '25 — Feb '26

FRSG — Islamabad

- Built real-time video processing pipelines for surveillance analytics, enabling scalable event detection and automated feature extraction workflows.
- Researched self-supervised learning techniques for altercation prediction from video data.

ML Engineer Intern

Jul '25 — Aug '25

National Aerospace Science & Technology (NASTP) — Islamabad, Pakistan

- Developed spatio-temporal hail prediction models using CV techniques on satellite imagery and real-time video sequences.
- Evaluated computer vision and temporal modeling approaches for predicting weather-related events from sequential data.

Teaching Assistant & Lab Demonstrator

Jan '24 — Jan '25

FAST NUCES — Islamabad

- Supported 200+ students in Introduction to Data Science and OOP; delivered labs and academic guidance.
- Conducted campus-wide Python workshop (PyNexus; 150+ participants).

AI/ML Engineer

Jun '24 — Aug '24

Artificial Intelligence and Machine Learning Lab (AIM LAB)

- Developed real-time data preprocessing and multimodal analysis pipelines for audio and text datasets, integrating automated CV parsing and feature extraction workflows using LlamaParse.

EDUCATION

Bachelors in Data Science, National University of Computer and Emerging Sciences (GPA: 3.52/4.0)

Jun '26

Pakistan

RESEARCH & PREPRINTS

[TimeGuard: An End-to-End MLOps Pipeline for Drift-Aware Time Series Anomaly Detection with Automated Model Retraining](#) — Containerized MLOps pipeline for drift detection, selective retraining, and live monitoring in time-series anomaly detection. (Apr 2026)

[MultiMind: A Multi-Agent System for Automated Bug Localization and Code Repair](#) — 4-agent autonomous code repair system (Planner → Coder → Tester → Reviewer) with dynamic retry/feedback loops. (Apr 2026)

[Protocol-Aware Deep Learning for Robust SCADA Intrusion Detection](#) — SCADA intrusion detection pipeline combining protocol-aware preprocessing and protocol inference for industrial network security. (Dec 2025)

[Leakage-Free Anomaly Detection: A Benign-Only Graph Autoencoder Framework for Network Intrusion Detection](#) — Benign-only, self-supervised GCN autoencoder for network intrusion detection, reducing reliance on labeled attack data. (Dec 2025)

PROJECTS

ArthoCare — Final Year Project

- Built a health-tech app (KMP + FastAPI) with "RA Lens", an OpenCV/MediaPipe analyzer for wrist, elbow, and shoulder range-of-motion assessment, and cut startup latency with a persistent worker architecture.

MultiMind

- Built a 4-agent autonomous code repair system (Planner → Coder → Tester → Reviewer) using LangGraph and Llama 3.3 70B, with dynamic retry/feedback loops and dual deployment via Flask (SSE streaming) and Rich terminal UI.

TimeGuard — Anomaly Detection & Monitoring Pipeline

- Built an end-to-end MLOps pipeline comparing ARIMA, Prophet, and LSTM Autoencoder models on the Numenta Anomaly Benchmark using MLflow, FastAPI, and Docker.
- Implemented drift detection and automated retraining workflows monitored through Prometheus, Grafana, and GitHub Actions CI/CD.

Airflow + MLflow MLOps Pipeline (infra/orchestration)

- Built and orchestrated ETL pipelines using Apache Airflow DAGs for automated ingestion, preprocessing, model training, and evaluation workflows with MLflow integration.

Music Recommendation Data Pipeline using PySpark

- Built a distributed music data pipeline using PySpark, Librosa, and MongoDB to preprocess audio files, extract MFCC-based features, and store transformed data for scalable recommendation workflows.

SKILLS

Programming & Scripting: Python, C++, R, JavaScript, SQL

Visualization & Reporting: D3.js, Power BI, Tableau, Grafana

Data Engineering & Databases: Apache Spark, Apache Kafka, Hadoop, MySQL, MongoDB, dbt, Airflow, Snowflake, Databricks

ML & AI Tools: TensorFlow, PyTorch, XGBoost, FastAPI, Flask, LangGraph

Cloud & Infrastructure: AWS, Azure, Docker, MLflow, GitHub Actions, Git

HONORS

Dean's List, FAST NUCES — Nov '25

RELEVANT COURSEWORK

Data Structures, Algorithms, Operating Systems, Database Systems, Artificial Intelligence, Deep Learning for Perception, Digital Image Processing, Parallel and Distributed Computing, Advanced Statistics, Linear Algebra, Differential Equations