

Ibrahim Hussain

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Quantitative Data Scientist | Systems Modelling | Risk & Decision Analytics

Quantitative Data Scientist specialising in statistical modelling of complex systems and high-dimensional analytics. Experienced in extracting structural patterns from large, messy datasets to build interpretable models for economic forecasting, healthcare AI, and risk analysis. Skilled in time-series modelling, feature engineering, and multi-source data fusion. Passionate about applying rigorous quantitative methods to inform decision-making under uncertainty in finance, healthcare, and strategic analytics.

Experience

SMARTFORUM

AI Engineer Intern

June – September 2025

- Optimised RAG pipelines for a AI application, reducing retrieval latency by ~20% by implementing optimised search pipelines(PostgreSQL), improving response accuracy and system scalability.
- Engineered modular AI agents using LangChain and LangGraph, automating a core workflow and reducing manual intervention in the data processing pipeline.
- Enhanced real-time interaction capabilities by integrating Automatic Speech Recognition (ASR) with a multi-model orchestration system through efficient indexing and query optimisation.

Projects & Technical Experience

INFLATION DYNAMICS IN PAKISTAN

Statistical Researcher

May 2025

- Analysed 43 years (1980-2023) of macroeconomic data to model inflation dynamics.
- Developed and compared ARIMA, Ridge, Lasso, and Elastic Net models to forecast inflation.
- Identified exchange rate volatility and money supply growth as the primary determinants of inflation through hypothesis testing and correlation analysis, providing actionable insights for economic strategy.

WRITER'S BLOCK

AI Engineer

December 2025

- Architected a resilient, multi-agent LLM system for automated, SEO-optimised content generation in the legal and healthcare sectors, reducing per-article cost to ~\$0.04.
- Engineered a production-grade content pipeline coordinating six parallel AI agents with auto-fallback models and retry logic, achieving a 85.5% success rate on generation tasks.
- Developed guardrails and a compiler agent to synthesise disparate LLM outputs into cohesive narratives and ensuring content quality.
- Built the full-stack application with Flask, REST APIs, and a Supabase/PostgreSQL database layer for real-time job tracking and data management.

Education

FAST UNIVERSITY

Bachelor of Science in Data Science

Islamabad, Pakistan

September 2023 – Present

Relevant Coursework: Machine Learning, Deep Learning, Data Mining, Big Data Systems, Database Systems & Warehousing, Advanced Statistics, Operating Systems, Software Engineering.

Technical Skills

Programming Languages: Python (Pandas, NumPy, Scikit-learn, Flask), R, C++, SQL (PostgreSQL, MySQL, SQLite), x86 Assembly.

Data Engineering & Big Data: Data Cleaning, Missing Data Imputation, Outlier Detection, Multi-source Data Fusion, Vector Databases (Pinecone), PostgreSQL.

Statistical & Quantitative Modelling: Time-Series Forecasting (ARIMA), Regularised Regression (Ridge, Lasso, Elastic Net), Hypothesis Testing, Feature Engineering, Model Diagnostics, Econometric Analysis.

Machine Learning & AI: Supervised Learning, Multi-label Classification, Deep Learning (CNNs, RNNs), NLP, Hugging Face Transformers, RAG Systems, LangChain, LangGraph.

Visualisation & Analytics: High-Dimensional Visual Analytics, Parallel Coordinates, Choropleths, Correlation & Density Analysis.

Systems & Tools: Git, GitHub, Linux, Windows, REST APIs.

Interests: Quantitative Systems Thinking, Economic Modelling, Tech Leadership, Digital Marketing Analytics.