

Ehtisham Afzal

Data Scientist

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Summary

Data Scientist with a strong foundation in machine learning, deep learning, and production-grade, end-to-end data solutions. Proven ability to build predictive models, perform comprehensive EDA, and build scalable ML pipelines. Experienced in client-focused and cross-functional projects, delivering insight-driven analytics. Proficient in deploying advanced AI techniques including NLP, Generative AI, transformer-based LLM architectures (BERT, GPT, RAG), and AI Agents built with frameworks like Lang Chain to solve complex, real-world problems. Passionate about transforming raw data into actionable business insights through analytical thinking and modern AI tools.

Technical Skills

- Programming Language:
 - Python
- Machine Learning:
 - Model Development, Evaluation and Validation
 - Neural Networks (CNN, RNN, Transformer)
 - Natural Language Processing (NLP)
 - Pytorch , Tensor Flow, Scikit-learn
- Generative AI & LLMs:
 - Lang Chain, Lang Graph
 - Retrieval-Augmented Generation (RAG)
 - AI Agents
- Prompt Engineering & Context chaining
- Data Science & Analytics
 - Data Preprocessing & Cleaning
 - Feature Engineering & Selection
 - Exploratory Data Analysis (EDA)
 - Data Visualization (Power BI)
 - Statistical Analysis & Hypothesis Testing
 - Predictive Analytics & Business Intelligence
- Database
 - SQL
 - Data Modeling & Schema Design

Project Management & Software Engineering Skills

- Software Development Practices
 - Object-Oriented Programming (OOP) & SOLID Principles
 - Full SDLC Understanding (Requirement Analysis → Deployment)
 - Version Control & Collaboration (Git, GitHub)
- Project Management
 - Agile Methodologies (Scrum)
 - Sprint Planning & Stand-ups

Education

Bachelor of Science in Information Technology

2021-2025

University: IIT, Quaid-i-Azam University, Islamabad

CGPA: 3.3

Certification

- Project Management
- Pak Finland Capacity Building Project on Microsoft Technologies (MUXBAY)

Projects

Python Projects

- **Medical Checkup Appointment Web Application** [[link](#)] – Built a web platform for scheduling and managing doctor appointments with user authentication and admin dashboards.
- **Library Management System** [[link](#)] – Built a Python application that manages library resources, user accounts, and book circulation through dedicated admin and student interfaces.
- **Bike Rental Application** [[link](#)] – Developed a web application for booking, tracking, and returning bikes with cost calculation and logging.
- **Coordinate Geometry Web Application** [[link](#)] – Created an interactive web application that unites Python-powered computation with dynamic visualization to perform and explore coordinate geometry operations seamlessly.

Machine Learning Projects

- **Demand Forecasting for Retail Store** [[link](#)] – Built a forecasting model to predict item-wise sales and optimize stock levels, reducing instances of overstock or stock out.
- **AI-Powered Supply Chain ERP for Retail Chain** [[link](#)] – Developed an intelligent ERP system that automates forecasting, inventory management, and supplier coordination using AI and data-driven insights.
- **Calibrated Risk Screening for Diabetes & Hypertension** [[link](#)] – Built an end-to-end screening system with XGBoost, isotonic calibration and a Flask + Bootstrap dashboard for diabetes and hypertension risk.
- **Prediction System (Flight Price / Loan Default)** [[link](#)] – Implemented models for flight price forecasting and loan default classification.

Deep Learning & AI Projects

- **Image-Based Disease Classification** [[link](#)] – Developed a deep learning classifier for medical images to identify diseases with high diagnostic accuracy.
- **Stock Price Prediction using LSTM** [[link](#)] – A Python web application using LSTM, and YFinance to predict future stock prices from historical data, predict opening, closing and high price for any US stock ticker.
- **Generative AI in Multimedia and Computer Graphics** [[link](#)] – Experimented with GANs to synthesize new images, create textures, and apply neural style transfer to videos.
- **Defect Detection on MVTec (PaDiM + PatchCore)** [[link](#)] – Implemented an anomaly detection pipeline on MVTec Dataset comparing PaDiM (localization) and PatchCore (classification), with reproducible metrics, overlays, and per-category model selection.

Experience

Freelance Data Scientist & ML Engineer

2024-Present

Remote | Project-based via Digital Agencies

- Performed EDA on structured datasets to uncover trends, outliers, and key features for modeling.
- Applied statistical analysis and hypothesis testing to validate assumptions and improve data quality.
- Built, trained, and optimized ML models (regression, classification, ensemble methods) with cross-validation and hyper parameter tuning.
- Evaluated models using metrics like accuracy, F1-score, RMSE, and AUC-ROC to ensure robustness.
- Developed modular pipelines for preprocessing, feature engineering, and train-test workflows.
- Contributed to deep learning projects (CNN, LSTM) for image and text-based applications.
- Experimented with Large Language Models (LLMs) and generative AI for NLP tasks and adaptive automation.
- Delivered project documentation and debugging support for clients and academic collaborations.
- Implemented a Retrieval-Augmented Generation (RAG) pipeline using Lang Chain and OpenAI APIs, enabling document-based Q&A and conversational AI agents.