

Zulqarnain Ali

MACHINE LEARNING ENGINEER · DATA SCIENTIST

Bahawalpur, Punjab, Pakistan

+92 3367917487 | Zulqarnain445ali@gmail.com | zulqarnainali.pk

Transforming cutting-edge research into scalable, production-ready AI solutions

Professional Summary

Results-driven Machine Learning Engineer specializing in healthcare AI and remote sensing, with multiple competition wins (Kaggle, Zindi) and peer-reviewed publications. Expert in deploying scalable ML solutions (PyTorch, TensorFlow) that deliver measurable business impact, including 40% faster inference times and 30%+ performance improvements over baseline solutions.

Professional Experience

Freelance

MACHINE LEARNING ENGINEER

2023 - Present

- Engineered custom machine learning models achieving 30%+ performance improvements over baseline solutions for diverse client requirements.
- Optimized model training pipelines reducing inference time by 40% through efficient data preprocessing and hyperparameter tuning.
- Implemented transfer learning techniques with pre-trained models accelerating development cycles by 60%.

PRIME HONDA

DATABASE OPERATIONS MANAGER

Jun 2023 - Oct 2023

- Spearheaded database restructuring initiative resulting in 25% improved data retrieval speed and 15% reduction in storage requirements.
- Implemented automated data validation protocols reducing error rates by 35% while ensuring accuracy and security.

Skills

Programming	Python, C++, SQL, JavaScript, HTML
ML & AI	Deep Learning, Transfer Learning, NLP, Computer Vision, Model Deployment
Frameworks	PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, Matplotlib, Sentinel-2
Data Engineering	ETL Pipelines, Data Cleaning, Feature Engineering, Database Management
Cloud & DevOps	API Development, Model Serving, Performance Optimization

Technical Projects

SepsisGuard: Early Detection of Pediatric Sepsis

LEAD DEVELOPER

- Spearheaded ML solution for pediatric sepsis prediction, enabling 6-hour early detection with 0.983 AUC, reducing ICU mortality risks.
- Engineered feature extraction and risk scoring pipeline that maintained high accuracy despite 30%+ missing laboratory data.
- Designed interpretable, real-time risk scoring system currently being adapted for live deployment in pediatric intensive care units.

Aerosol Optical Depth Estimation

LEAD DEVELOPER

- Engineered data pipeline combining Sentinel-2 satellite imagery with AERONET ground data achieving Pearson correlation of 0.964.
- Optimized cloud-masking algorithms, reducing preprocessing time by 45% while maintaining 99% data integrity.
- Delivered solution with significant applications for air quality monitoring and climate dynamics research.

PII Data Detection System

LEAD DEVELOPER

- Built GDPR-compliant PII detection system with 95% accuracy, automating data anonymization for 10,000+ records/minute.
- Implemented NLP techniques and machine learning algorithms to detect and anonymize personal data while preserving analytical value.
- Created compliance framework ensuring adherence to FERPA, GDPR, and CCPA regulations for secure data utilization.

Achievements

2024	Winner - 1st Place , TechQuest 2024 Data Science Competition	IUB BWP
2024	Bronze Medal , BirdCLEF 2024	Kaggle
2024	Bronze Medal , RSNA 2024	Kaggle
2024	GREEN Star , Aerosol Optical Depth Estimation Competition	Solafune, Inc.
2023	Gold Medal , CGIAR Root Volume Estimation Competition	Zindi
2023	Bronze Medal , Specializing Large Language Models for Telecom Networks	ITU AI/ML in 5G Challenge, Zindi
2023	Youth Laptop Award , Issued by PM, Shehbaz Sharif	Government of Pakistan

Publications

A CatBoost-Based Approach for Aerosol Optical Depth Estimation Using Multi-Spectral Sentinel-2 Data

Research Paper

AUTHOR

- Pioneered novel AOD estimation method utilizing Sentinel-2 data and CatBoost with hybrid features (spectral ratios, wavelets, texture).
- Achieved breakthrough accuracy (Pearson $r = 0.9640 \pm 0.0460$) outperforming traditional methods for air quality assessment.
- Established new benchmark for remote sensing applications in climate studies and public health monitoring.

Cryptocurrency & Decentralization

Book

AUTHOR

- Authored comprehensive guide explaining complex blockchain concepts in accessible language for technical and non-technical audiences.
- Analyzed decentralized systems including Bitcoin and Ethereum, exploring implications for banking and supply chain.

Education

The Islamia University of Bahawalpur

BACHELOR’S DEGREE IN DATA SCIENCE

2022 - 2026

The Lead College Fort Abbas

INTERMEDIATE PRE-ENGINEERING

2020 - 2022

Certifications

- IBM Data Science Specialization, IBM
- IBM AI Enterprise Workflow Specialization, IBM
- Advanced Data Science with IBM Specialization, IBM
- Applied Data Science Lab, WorldQuant University

Labs Experience

Applied Data Science Lab

WorldQuant University

PARTICIPANT

- Executed 8 end-to-end projects encompassing data access (files, SQL, NoSQL, APIs), ETL pipelines, and model building.
- Developed visualization dashboards translating complex insights for non-technical stakeholders with 95% comprehension rate.

Applied AI Lab

WorldQuant University

PARTICIPANT

- Completed 6 advanced projects utilizing PyTorch for image classification, object detection, and generative modeling.
- Built and fine-tuned neural network architectures leveraging transfer learning techniques.

Volunteering

Itthad Business City

FUNDRAISING COORDINATOR

Jun 2023 - Oct 2023

- Orchestrated fundraising events generating 40% increase in donations compared to previous campaigns.
- Coordinated food distribution logistics ensuring efficient delivery to 500+ community members weekly.