Zulqarnain Ali

Machine Learning Researcher & Data Scientist

Bahawalpur, Punjab
Pakistan
+92 3367917487
Zulqarnain445ali@gmail.com
zulqarnainalipk
zulqarnainalipk

Professional Summary

Machine Learning Engineer with demonstrated expertise in delivering AI-driven solutions across healthcare, remote sensing, and data science domains. Proficient in PyTorch, TensorFlow, and end-to-end ML pipelines from research to deployment. Published researcher with 5x Kaggle medal achievements, specializing in NLP, computer vision, and transfer learning for real-world applications.

Professional Experience

Jul 2025–Present **Independent ML Mentor**, *Topmate.io*, Remote
- Provide 1:1 mentorship, project coaching, and portfolio reviews for ML/DS professionals and students
- Guide Kaggle competition strategies, sharing insights from 5x medal achievements across diverse domains
- Mentor final-year ML projects with emphasis on research methodologies and practical implementations

Jun 2025–Present **Python Developer**, *Shipd*, Remote
- Develop production-grade Python solutions for AI model training on elite invite-only platform
- Engineer high-performance algorithms and API integrations serving as coding proficiency benchmarks
- Ranked among top 5% contributors for code quality, solving complex problems in data structures and algorithms

2023–Present **Machine Learning Engineer**, *Freelance*, Remote
- Engineered custom machine learning models achieving 30%+ performance improvements over baselines
- Optimized model training pipelines reducing inference time by 40% through advanced optimization techniques
- Implemented transfer learning with pre-trained models, accelerating development cycles by 60%

Jun 2023–Oct 2023 **Database Operations Manager**, *PRIME HONDA*, Bahawalpur, Pakistan
- Spearheaded comprehensive database restructuring initiative improving data retrieval speed by 25%
- Implemented automated validation protocols and quality assurance measures reducing error rates by 35%
- Managed database compliance and optimization for automotive industry standards

Research Projects

Apr 2025–May 2025 **Zeffy: Advanced AutoML Pipeline**, *The Islamia University of Bahawalpur*
- Developed Python-based automated machine learning pipeline simplifying high-performance model development
- Integrated state-of-the-art feature engineering, hyperparameter optimization, and ensembling techniques
- Implemented modular architecture supporting gradient boosting, linear models, and deep neural networks

Feb 2025 **SepsisGuard: Pediatric Early Detection System**, *The Islamia University of Bahawalpur*, GitHub
- Developed machine learning system predicting pediatric sepsis 6 hours before clinical diagnosis (AUC: 0.983)
- Successfully handled 30%+ missing clinical data through automated temporal alignment and feature engineering
- Designed interpretable Random Forest model for real-time PICU deployment with transparent risk scoring

Jul 2024–Sep 2024 **Aerosol Optical Depth Estimation**, *The Islamia University of Bahawalpur*, GitHub
- Combined Sentinel-2 satellite imagery with AERONET ground-truth data achieving 0.964 Pearson correlation
- Developed comprehensive pipeline for atmospheric particulate matter monitoring supporting air quality research
- Optimized preprocessing with cloud-masking techniques, reducing processing time by 45% for global monitoring

Jun 2024–Aug 2024 **Satellite Data Instance Segmentation for Agricultural Lands**, *The Islamia University of Bahawalpur*, GitHub
- Applied advanced instance segmentation techniques to high-resolution agricultural satellite imagery
- Achieved accurate field boundary detection for crop monitoring and precision agriculture applications
- Integrated Sentinel-2 imagery processing with GIS tools for spatial distribution analysis and land management

Publications

Apr 2025 **A CatBoost-Based Approach for Aerosol Optical Depth Estimation Using Multi-Spectral Sentinel-2 Data**, *Acceleron Aerospace Journal*, Publication Link
- Proposed novel hybrid-feature methodology using CatBoost for atmospheric monitoring
- Achieved 0.9640 $\pm$ 0.0460 Pearson correlation coefficient, outperforming existing baselines
- Advanced benchmarks for remote sensing applications in public health and environmental monitoring

Education

2022–2026 **Bachelor of Science in Data Science**, *The Islamia University of Bahawalpur*, Pakistan
Emerging Researcher Award (2025), Winner - TechQuest 2024 Data Science Competition

Awards & Recognition

Kaggle Competitions: Bronze Medals in Jane Street Market Forecasting (2025), BirdCLEF (2024), RSNA Medical Imaging (2024), Home Credit Risk Modeling (2024), LLM AI-Text Detection (2024)

Zindi Competitions: Gold Medal – CGIAR Root Volume Estimation (2023); Bronze Medals in ITU AI/ML in 5G Challenge (2023), Lacuna Solar Survey (2025), and Telecom LLM Optimization (2024)

Solafune Challenges: Green Star – Aerosol Optical Depth Estimation (2024); Bronze Star – Field Area Segmentation (2024)

Academic & Professional: Emerging Researcher Award (2025), TechQuest 1st Place (2024), Youth Laptop Award – Govt. of Pakistan (2023)

Technical Skills

Programming Languages	Python, C++, SQL, JavaScript, HTML/CSS
ML/Data Science Frameworks	PyTorch, TensorFlow, Keras, Scikit-learn, Hugging Face Transformers, Pandas, NumPy, Matplotlib, Seaborn, Plotly
Computer Vision	OpenCV, YOLO, ResNet, VGG, Object Detection, Instance Segmentation, Transfer Learning, Medical Image Analysis
Natural Language Processing	BERT, GPT, Transformers, Text Classification, Sentiment Analysis, AI Text Detection
Remote Sensing	Sentinel-2 Imagery, AERONET Data, Geospatial Analysis, Atmospheric Monitoring, Satellite Image Processing
Databases & Data Engineering	PostgreSQL, MySQL, MongoDB, NoSQL, ETL Pipelines, Data Preprocessing, Feature Engineering
Tools & Deployment	Docker, Git, Linux, API Development, Model Serving, Jupyter Notebooks

Professional Development

Key Certifications

May 2025 **Certificate of Publication**, *Acceleron Aerospace*, Credential: Certificate of Publication
Research publication recognition for aerosol optical depth estimation methodology

May 2025 **Understanding Research Methods**, *SOAS University of London*, Credential: Y941TVF49ZIS
Advanced research methodologies and quantitative analysis techniques

Apr 2025 **Applied AI Lab: Deep Learning for Computer Vision**, *WorldQuant University*, Credly Badge
Advanced computer vision, deep learning, and PyTorch implementation

Sep 2024 **Google Business Intelligence Specialization**, *Google*, Credential: VL48G9HYPZM3
Data analysis, visualization, and business intelligence solutions

Jul 2023 **IBM AI Enterprise Workflow Specialization**, *IBM*, Credential: 8A8DH8T4MWGM
Enterprise-level AI implementation, deployment, and workflow management

Apr 2023 **IBM Data Science Specialization**, *IBM*, Credential: 4ZQ7NP9G5HEY
Comprehensive data science methodology, tools, and practical applications

Laboratory & Practical Experience

Apr 2025 **Applied AI Lab Participant**, *WorldQuant University*
- Completed 6 advanced projects in image classification and generative modeling using PyTorch
- Utilized transfer learning techniques to fine-tune state-of-the-art models
- Developed expertise in cutting-edge AI research and implementation

Apr 2024 **Applied Data Science Lab Participant**, *WorldQuant University*
- Completed 8 comprehensive projects covering ETL pipelines, APIs, SQL, NoSQL, and modeling
- Built interactive dashboards for insight communication with 95% clarity rating
- Gained hands-on experience in real-world data science workflows

Community Engagement

Jun 2023–Oct 2023 **Fundraising Coordinator**, *Itthad Business City*, Bahawalpur
- Led community fundraising events that exceeded previous efforts by 40%
- Managed logistics for food distribution serving 500+ individuals weekly
- Demonstrated leadership and social responsibility in community service