Furqan Ahmad

✉ fahmad.ktk@gmail.com — in furqan-ktk — ⊙ Furqan3 — 🌐 Portfolio

PROFESSIONAL SUMMARY

Machine Learning Engineer with expertise in developing and deploying ML solutions, with a focus on computer vision, NLP and image processing. Skilled in implementing end-to-end ML pipelines. Proven track record in leading technical projects and delivering innovative solutions.

TECHNICAL EXPERTISE

- **Programming Languages:** Python, C/C++, JavaScript, Go

- **ML/AI Technologies:** TensorFlow, PyTorch, OpenCV, Scikit-learn, NumPy, Pandas, Transformers, Ollama, RAG (Retrieval-Augmented Generation)

- **Web Technologies:** FastAPI, Next.js, React.js

- **DevOps:** Docker, Git, CI/CD

- **Key Skills:** Machine Learning, NLP, Computer Vision, Image Processing

PROFESSIONAL EXPERIENCE

Vision Tech 360　　　　　　　　　　　　　　　　　　　　　　　　*Islamabad, Pakistan*
Machine Learning Engineer　　　　　　　　　　　　　　　　　　　　*July 2024 - Present*

- Developed Retrieval-Augmented Generation (RAG) chatbots through end-to-end management of data collection, cleaning, model training, and deployment, improving response accuracy by 20% for knowledge-based queries

- Built facial recognition surveillance systems by overseeing data acquisition, preprocessing, model training, and deployment, achieving 95% accuracy across 50+ cameras in real time

- Deployed machine learning models via REST APIs, ensuring they handle 500+ requests per second with an average latency of 150ms

- Reduced model inference time by 20% through optimization techniques and parallel processing

- Automated CI/CD pipelines, reducing deployment time by 50%

IMAGAGE INC　　　　　　　　　　　　　　　　　　　　　　　　　　*Remote*
Software Development Engineering Intern　　　　　　　　　　　　　*June 2023 – Sep 2023*

- Developed "TT Scorer" web application

- Implemented responsive front-end interface reducing page load time by 40%

- Optimized database queries improving response time by 60% for 100,000+ records

- Achieved 99.9% uptime through robust error handling and monitoring

AIRLIFT Technologies　　　　　　　　　　　　　　　　　　　　　　*Islamabad, Pakistan*
IoT/Embedded Systems Engineer Intern　　　　　　　　　　　　　　*Feb 2022 – May 2022*

- Implemented automatic lock system reducing delivery time by 30% across 900+ cabins

- Developed embedded solutions improving delivery efficiency by 45%

- Created firmware reducing power consumption by 25% for IoT devices

- Achieved 98% system reliability through comprehensive testing

TECHNICAL PROJECTS

AI-Powered Tourism Assistant *June 2024*
Individual

- Developed an AI-powered tourism assistant leveraging vector search and LLM (Groq API) for efficient query handling.

- Integrated MongoDB for storing and retrieving tourism spot data, enabling seamless vector-based search operations.

- Utilized HuggingFace embeddings (sentence-transformers/all-MiniLM-L6-v2) for document embedding and similarity search.

- Implemented a Retrieval-Augmented Generation (RAG) pipeline to enhance response accuracy and relevance.

- Designed the system to process user queries, retrieve relevant tourism spots, and generate context-aware responses using Groq's Llama3-8b model.

- Ensured secure environment configuration using `dotenv` for managing API keys and MongoDB credentials.

Network Anomaly Detection System *June 2024*
Individual

- Developed a Python-based system to monitor and detect anomalies in network traffic using statistical methods and Isolation Forest.

- Collected and analyzed network statistics (bytes sent/received, packets sent/received) in real-time using the `psutil` library.

- Implemented statistical anomaly detection by calculating Z-scores and identifying deviations beyond a threshold.

- Utilized Isolation Forest for unsupervised anomaly detection, achieving high accuracy in identifying unusual network behavior.

- Visualized network traffic trends and anomalies using `matplotlib` for better insights and debugging.

- Processed and analyzed 500+ data points with minimal latency, ensuring real-time performance.

- Integrated process information retrieval to correlate anomalies with specific processes, enhancing root cause analysis.

Histopathological Image Segmentation and Classification *April 2023 – June 2023*
Developer

- Developed a U-Net model for semantic segmentation of histopathological images, achieving a validation accuracy of 77.27% and a mean IoU of 0.4786.

- Implemented a custom data preparation pipeline to preprocess and augment 1,200 histopathological images and their corresponding masks, ensuring robust model training.

- Designed a classification model to categorize images into 3 classes (BCC, SCC, IEC) with an F1 score of 0.484 for IEC, demonstrating effective feature extraction from segmented masks.

- Utilized TensorFlow and Keras to build, train, and evaluate deep learning models, incorporating techniques such as batch normalization, dropout, and Adam optimization.

- Visualized model performance using learning curves, confusion matrices, and F1 scores, providing insights into model behavior and areas for improvement.

- Automated the end-to-end workflow, including data loading, preprocessing, model training, and evaluation, reducing manual effort and improving reproducibility.

Skin Lesion Classification using Image Processing *April 2023 – June 2023*
Developer

- Developed a Python-based system to classify skin lesions as either normal or melanoma using image processing techniques.

- Implemented feature extraction algorithms to analyze asymmetry, border irregularity, color variation, and diameter of lesions.

- Utilized OpenCV, NumPy, and Pandas for image processing, data manipulation, and statistical analysis.

- Visualized data distributions and trends using Matplotlib, including boxplots, histograms, and scatter plots.

- Achieved an accuracy of 89% by evaluating the PH2 dataset containing 200+ dermoscopic images.

- Optimized feature thresholds to improve classification performance and reduce mispredictions.

Braille-to-Text Conversion *Month 2023 – Month 2023*
Developer

- Developed Python OCR system using OpenCV and NumPy to decode Braille characters with 92% accuracy

- Optimized image processing pipeline achieving 40ms per character through adaptive thresholding and contour analysis

- Implemented dynamic row/column detection algorithm handling various Braille document layouts

- Created expandable dictionary mapping supporting 26 alphabets and space character recognition

EDUCATION

National University of Science and Technology *Islamabad, Pakistan*
B.S. in Computer Engineering *Graduated June 2024*

- Thesis: Blockchain-based Transaction Processor with FPGA Implementation

- Key Courses: Data Structures & Algorithms, AI, Computer Vision, Digital Signal Processing

- Technical Focus: Machine Learning, Image Processing, Embedded Systems