FAIZAN AZIZ

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PROFESSIONAL EXPERIENCE

AI Engineer Feb 2025 – June 2025
DMLytics *Islamabad, Pakistan*

- Architected and implemented a **production-ready orthorectification preprocessing pipeline** for drone imagery, independently handling the full system lifecycle from design to validation.
- Processed **1,400+ high-resolution aerial images** (~25MB per image), extracting EXIF and flight metadata to normalize orientation using **pitch, roll, and yaw (PRY)** values across variable field sizes.
- Applied geometric rotations and spatial normalization to standardize imagery prior to georeferencing, ensuring consistent spatial alignment across large-scale agricultural datasets.
- Optimized storage and downstream processing by converting corrected imagery to **JP2** format while preserving critical spatial and radiometric fidelity.
- Designed and co-developed a **KML/KMZ-based flight plan generation system** in a **4-member team** to create structured aerial survey paths over user-defined geographic regions.
- Implemented multi-pass flight planning logic combining high-altitude coverage with low-altitude reverse passes to enable detailed **crop health analysis**.
- Automated generation of finalized **KMZ** flight plans compatible with drone mission software and geospatial visualization platforms, delivering a deployment-ready solution.

EDUCATION

Bachelors Degree in Data Science Aug 2022 – July 2026
FAST National University of Computer and Emerging Sciences (FAST NUCES) Islamabad, Pakistan
GPA: 3.65 / 4.00

- **Coursework:** Deep Learning, Artificial Intelligence, Multi-Agent Systems, Parallel & Distributed Computing, Big Data Analytics, Data Mining, Algorithms, Data Structures, Object-Oriented Programming, Software Engineering, Data Warehouse, Database Systems, Computer Networks, Operating Systems
- **Technical Exposure:** Computer Vision, Python, PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas, SQL, Linux, Git, GitHub, Spark, Kafka, Hadoop, Flask, MongoDB, Tableau, Power BI, C++, x86 Assembly

PROJECTS

- **Vigilon – AI-Powered Smart Surveillance System**
  Built a CCTV surveillance system using **Computer Vision** for weapon detection, intrusion detection, and behavioral anomaly analysis. Implemented **YOLO**-based object detection and adaptive anomaly detection to reduce false positives. Designed an end-to-end pipeline for video ingestion, threat classification, alerting, and backend integration.
- **Scalable Streaming Join Engine using MeshJoin**
  Implemented the **MeshJoin** algorithm to join high-volume transaction streams with disk-resident dimension tables. Designed memory-partitioned buffers and queue-based stream processing to support incremental joins. Integrated duplicate detection and disk buffering to simulate **streaming ETL** and real-time data warehousing.
- **Music Recommendation System using Audio Similarity**
  Developed a content-based music recommendation system using **Locality-Sensitive Hashing (LSH)**. Extracted **MFCC** audio features to generate compact track representations. Built a user interface to play tracks and dynamically display recommendations.
- **Multi-Task Facial Emotion Analysis**
  Built a facial emotion analysis pipeline using **Computer Vision** and **Multi-Task Deep Learning**. Applied transfer learning with **VGG16** and **ResNet50** in **TensorFlow** and **Keras**. Performed data preprocessing, facial landmark normalization, and evaluated classification and regression performance.
- **Geometric Image Alignment and Multi-View Image Stitching System**
  Developed a computer vision pipeline for geometric image alignment and multi-view image stitching using **OpenCV**. Applied affine transformations to align heterogeneous inputs and generate structured image mosaics.
- **Image Similarity Search using Locality-Sensitive Hashing**
  Built a content-based image retrieval system using **Locality-Sensitive Hashing (LSH)**. Extracted image feature histograms and implemented an interactive web interface for approximate nearest neighbor search.

HONORS & AWARDS

- Dean's List of Honors x4
- Medals for Academic Excellence x2