Aashan Javed

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Research Interests

Machine Learning, Generative AI, Geospatial Modeling, Climate Informatics, Diffusion Models, Large-Scale Forecasting Systems

Experience

Machine Learning Engineer (R&D) Jan 2025 – Present
FortyGuard *Abu Dhabi*
- Researching **large-scale temperature forecasting** for urban climate intelligence.
- Designing diffusion-based models to predict **2 m temperatures at 10 m resolution**.
- Integrating multi-source geospatial data (satellite, stations, IoT) for robust training.

Software Engineer (Machine Learning) May 2024 – Dec 2024
FortyGuard, Internship *Abu Dhabi*
- Automated geospatial data pipelines and built predictive models for temperature analysis.
- Improved real-time forecasting for climate dashboards via ML-optimized APIs.

Machine Learning Engineer Jun 2023 – Sep 2023
Payactiv SDS IT, Internship *Remote*
- Developed fraud anomaly detection models; improved precision by 22%.
- Explored LLM-based scoring methods for risk analytics.

Publications

Budget-Aware Fraud Detection with Label Delay: Stable Top-K Decisioning with Conformal Guarantees Zenodo
- Preprint, 2025. Stabilizes Top-K alerts under label delay/drift with split-conformal guarantees.

AlphaEarth Climate Monitoring System: High-Resolution Climate Monitoring with Foundation Models Zenodo
- Preprint, 2025. 10 m multi-modal climate monitoring using geospatial embeddings (Sentinel-1/2, LiDAR, ERA5).

Decoding Coarse Climate Variables to 10 m Using Geospatial Foundation Embeddings Zenodo
- Preprint, 2025. Downscales ERA5/ERA5-Land anomalies to 10 m via lightweight decoders on embeddings.

Selected Research Projects

Urban Climate Forecasting with Diffusion Models
- Diffusion-based generative modeling for high-resolution urban temperature at 2 m.
- Benchmarked vs. baselines; promising gains for urban heat mapping.

Education

National University of Computer and Emerging Sciences (FAST) Sep 2020 – Jun 2024
B.Sc. Computer Science, Islamabad *Honors: Rector's List of Honors*
- Relevant coursework: Machine Learning, Probabilistic Models, Optimization, Distributed Systems, (Geo)Spatial Analytics.

Skills & Languages

Core ML: Python, NumPy, Pandas, Scikit-learn, PyTorch, XGBoost
Geospatial/Climate: Google Earth Engine, Rasterio, GDAL, xarray, QGIS
MLOps & Data: Airflow, Docker, Kubernetes, FastAPI, Spark, Kafka, CI/CD
Cloud: AWS, Azure
Databases: SQL, NoSQL
Languages: English — C1 (IELTS 7.5, 2024); Urdu — Native; Punjabi — Fluent; German — A2 (in progress)

Leadership & Achievements

Campus Ambassador — **Youth For Pakistan**
Rector's List of Honors — **FAST NUCES**
Member — **Google Cloud Community Pakistan**
Head of Information — **FAST Community Service**
Digital Volunteer — **Alkhidmat Foundation Pakistan**
Runner's Up — **ICC Cricket Hackathon (India)**

Certifications

Machine Learning Specialization — **Stanford Online**
Google Data Analytics — **Google**
Microsoft Azure Fundamentals — **Microsoft**
IBM Data Science Specialization — **IBM**
LangChain for LLM Application Development — **DataCamp**