Aashan Javed

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ABOUT ME

ML engineer in climate & geospatial AI, building 10 m / 2 m urban forecasts and pursuing research in AI for climate intelligence.

EDUCATION AND TRAINING

[09/2020 – 06/2024]

Bachelor of Science in Computer Science (BSCS) - Rector's List of Honor | Gold Medal (7th Semester)

National University of Computer and Emerging Sciences (FAST), Islamabad, Pakistan https://isb.nu.edu.pk/

Level in EQF: EQF level 6 | **Thesis:** EquiSpeak: real-time ASL recognition app with word-level detection and automatic sentence structuring beyond isolated signs

- Artificial Intelligence; Data Mining; Machine Learning Operations (MLOps); Linear Algebra; Calculus and Analytical Geometry; Differential Equations; Data Structures; Database Systems; Parallel & Distributed Computing; Distributed Data Engineering; Cloud Computing.

WORK EXPERIENCE

FortyGuard - Abu Dhabi, United Arab Emirates

[01/01/2025 – Current]

Machine Learning Engineer (Research and Development)

- Predicted **2 m air temperatures at 10 m resolution** with **$R^2 \approx 0.85$** and **RMSE ≈ 1.2 °C**, validated on ~10 urban station observations in San Jose, California (Jan 2022).
- Achieved a **forecast skill score of 0.70 vs persistence baseline** over a 24-hour horizon, benchmarked on ERA5 reanalysis and 15 surface stations.
- Improved inference speed, enabling faster deployment of climate intelligence models for urban-scale planning.

FortyGuard - Abu Dhabi, United Arab Emirates

[27/05/2024 – 31/12/2024]

Software Engineer (Machine Learning) - Internship

- Automated temperature data processing pipelines by integrating frontend dashboards with ML-driven backend APIs, boosting analytics **efficiency by 20%**.
- Implemented caching and query optimization that **reduced response time by 40%**, enabling faster real-time climate insights.
- Optimized the MLOps pipeline, **slashing deployment time 35%** and enabling 3x faster model releases.

Payactiv - Islamabad, Pakistan

[22/06/2023 – 22/09/2023]

Machine Learning Engineer - Internship

- Improved fraud detection precision by 22% with conformal-calibrated models.
- Applied LLM scoring to analyze transaction text and metadata for contextual risk signals.

PUBLICATIONS

Decoding Coarse Climate Variables to 10 m Using Geospatial Foundation Embeddings. (Preprint)

Javed, A., & Altaf, A. (2025). Decoding Coarse Climate Variables to 10 m Using Geospatial Foundation Embeddings. Zenodo. https://doi.org/10.5281/zenodo.17171318

Contribution: Embedding-based decoders cut RMSE by 21-34% vs statistical downscalers and 11-19% vs U-Net baselines, with faster inference on urban and mixed land covers.

Preventing Static Element Double Counting in Urban Video Segmentation for Autonomous Driving. (Preprint)

Javed, A. (2025). Preventing Static Element Double Counting in Urban Video Segmentation for Autonomous Driving. Zenodo. https://doi.org/10.5281/zenodo.17218433

Contribution**:** Revisitation-aware video segmentation that halves static overcount (SOR 2.10 → 1.05) and improves frame metrics (mIoU +1.9, MOTA +15.3) via temporal smoothing and pixel-level tracking.

ONGOING RESEARCH WORK

Urban Temperature Prediction and Forecasting at 2m level with Diffusion Models

Developing diffusion models for 2 m temperature forecasting at 10 m resolution, outperforming persistence and U-Net baselines on urban heterogeneous tiles validated with station data.

PROJECTS

AlphaEarth Climate Monitoring System

- Integrated DeepMind AlphaEarth embeddings with geospatial pipelines to deliver 10 m climate insights for urban planning.
- Enabled scalable temperature prediction, similarity search, and change detection; boosted anomaly detection accuracy by ~17% vs baseline.
- **Github**: https://github.com/Aashan47/AlphaEarth-Climate-Monitor-

Revisitation Aware Video Segmentation

- Built PSPNet segmentation with motion tracking and revisit detection to fix static scene and loop overcounting in urban videos.
- Improved video segmentation (mIoU +1.9, MOTA +15.3, ID switches −52%, static overcount −50%) with a reproducible pipeline (CLI + Cityscapes configs).
- **Github**: https://github.com/Aashan47/Video-Segmentation/tree/main

Real-time Sign Language Communication System (Final Year Thesis)

- Built ASL-to-text system (OpenCV, TensorFlow) with 90%+ accuracy on 25+ gestures; real-time <200 ms latency; extended to sentence-level translation.
- Github: https://github.com/Aashan47/Real-time-Sign-Language-Communication-System

SKILLS

Technical / Research / Leadership & Collaboration

Python | TensorFlow | PyTorch | scikit-learn | supervised/unsupervised learning | deep learning | SQL/NoSQL, | Large Language Models | generative models (diffusion, transformers) | Kafka | Docker/Kubernetes | Spark | Airflow | AWS/Azure | FastAPI | CI/CD | QGIS | Google Earth Engine | React/Angular | system design | latency & cost optimization | experimental design, | LaTeX/Overleaf | data visualization (matplotlib/Plotly) | mentoring interns | Clear communication | cross-disciplinary teamwork | statistical inference | prototyping novel approaches | Quick adaptability | Team leadership

HONOURS, AWARDS & COMMUNITY ENGAGEMENT

Rector's List of Honor | Gold Medalist – FAST (Academic Excellence, Top Ranking Student)

Runner-up - ICC Hackathon (international finalist, cricket analytics)

Digital Volunteer - Alkhidmat Foundation (education, health, flood relief, 2022)

Other roles: Campus Ambassador (Youth for Pakistan), Head of Info (FAST NUCES Community Service Society), Google Cloud community member (workshops, cloud events)

CERTIFICATIONS

Machine Learning Specialization — Stanford Online (07/2023)

IBM Data Science Specialization — IBM (01/2024)

Google Data Analytics — Google (08/2023)