Muhammad Bilal
Earth Observation Analyst

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Experience

Geospatial Consultant
PeaceEye

Oct 2025 – Dec 2025
Remote - Freelance

- Analyzed farmer–herder conflict dynamics in Nigeria by integrating geospatial data on herder migration routes, conflict locations, and environmental conditions.
- Performed statistical analyses to assess correlations between conflict events and environmental drivers such as vegetation change and precipitation variability.
- Identified climate-driven mobility patterns contributing to conflict escalation.

Geospatial Sciences Intern
United Nation Development Programme

Feb 2025 – July 2025
Remote

- Managed the Geodata Search Infrastructure on ArcGIS Enterprise to visualize team outputs across SDG-aligned development projects.
- Developed a web application using ArcGIS Experience Builder to visualize the Guatemalan Migration Activity Index at the municipal level
- Built a dashboard to visualize building damage assessments in the Gaza Strip using GeoAI.
- Trained SAMLoRA (Esri) GeoAI model on 3D drone imagery to detect damaged buildings and barricades for automated damage assessment.
- Developed an Experience Builder to visualize SAMLoRA-detected damaged buildings and barricades in Haiti for insight-driven decision-making.
- Created a GEE script to compute indices such as NDBI and BSI, and performed land cover classification in Tehran for damage assessment.

Geospatial Analyst
Riscognition

May 2023 – Aug 2023
Munich, Germany

- Project: Visualization of near-real-time lightning data on the web using the Maplibre JavaScript library and overlay with landcover and forest layers to access the effect of lightning on forest fires for the SAFERs Project.
- Transformation of lightning data into PMtiles format using the Tippecanoe command-line tool for efficient web visualization.
- Configured the Mini.io cloud platform for hosting lightning data, landcover, and forest datasets.
- Implementation of hotspot functionality to visualize lightning strike intensity at different locations in Europe.

Deputy Manager GIS
Propsure Digital Solutions

Jan 2020 – Oct 2022
Islamabad, Pakistan

- Managed centralized database and dashboard related to real estate services.
- Visualized big data using PostGIS databases and Geoserver for mapping applications
- Built a prototype dashboard for visualization Land Record System using leaflet.
- Conducted Demographic and Feasibility analysis of Real Estate properties.
- Led the development and management of a GeoNode server to host spatial datasets with predefined quality standards.

Education

Paris Lodron University of Salzburg & Palacky University Olomouc
Dual Masters of Science in Geoinformatics, Earth Observation & Cartography

Sep 2022 – July 2024
Austria & Czech Republic

- **Honors:** Awarded ERASMUS Mundus Scholarship for COPERNICUS MASTER IN DIGITAL EARTH
- **Thesis:** Using geotagged photos to design Etosha National Park map set

Pir Mehr Ali Shah Arid Agriculture University
Bachelor of Science in Geo-Informatics

Sep 2015 – Aug 2019
Rawalpindi, Pakistan

Skills

Languages: German (A2.2); English (Fluent/C1)
Software / Platforms: ArcGIS Pro, QGIS, Google Earth Engine, PostgreSQL/PostGIS, Ecognition, ERDAS, Envi, ArcGIS Online, ESRI Suite, GitHub, Geoserver, GeoNode, AWS, MinIO S3, Carto, MapTiler, PowerBI, FME, AutoCAD
Technical: SQL (Spatial Queries), Leaflet, Maplibre GL JS, Mapbox GL JS, Python (Rasterio, Geopandas, GDAL/OGR, Numpy, Xarray), R (sf, raster, and ggplot), Cesium, GeeMap, JavaScript, HTML/CSS
Geospatial Relevant: Spatial Analysis, Network Analysis, Web Mapping, Data Modelling, Thematic Cartography, 3D Modelling, Object-Based Image Assessment, Data Processing and Management

Projects

- Developed an Experience Builder application to support policy makers by visualizing the Guatemalan Migration Activity Index and its relation to key socio-economic and climate risk indicators.
- Built a dashboard to visualize GeoAI outputs, rapidly mapping destroyed buildings and displaying hospital and school damage in the Gaza Strip to support effective humanitarian response.
- Developed an Experience Builder app to visualize SAMLoRA model outputs of damaged buildings and barricades in Haiti for informed decision-making.
- Developed an interactive web application for Etosha National Park using Leaflet, HTML, and CSS.
- Developed an Air Pollutants web map using Mapbox GL JS that visualizes different pollutants like NO2, SO2, and their exposure to the population in the Indian Gangetic Plain.
- Developed an interactive web application for Tam Giang Lagoon water quality using ArcGIS Experience Builder.
- Performed UAV image processing and modeling to create an orthomosaic image and DEM of a football field.
- Conducted temperature time series analysis using Google Earth Engine.
- Identified suitable sites for tourist hotels in Austria using weighted overlay and cost path analysis.
- Performed geomorphometric analysis of the catchment area around the southern part of Taxenbach, Salzburg.
- Designed thematic maps, including choropleth, graduated symbol, multivariate, and Wurman dots maps.

Summer Schools and Conferences

- **AGIT-2025** - Conference for Geoinformatics, Presented a Master Thesis poster: "Using Geotagged Photos to Design Etosha National Park Map set" (July 2025).
- **GI-Salzburg23 Conference** - International Forum for Geoinformatics, Presented a scientific posters: "Copernicus and Citizen Science" (July 2023).
- **Blended Intensive Course (BIP)** - Participatory tools for urban nature planning and management (Feb 2023 – June 2023).
- **International Spring School on Visualization 2023** - Focused on warfare in historical and modern contexts, emphasizing the role of maps, spatial intelligence, and geospatial visualization in conflict analysis and war reporting (Czech, May 2023).

References

Tala Hussein – Reporting Manager
Quality Assurance Specialist | United Nations Development Programme | tala.hussein@undp.org | Professional Reference
Jakob Lobensteiner – Internship Manager
Chief Technological Officer | Riscognition | jakob.lobensteiner@riscognition.com | Professional Reference
Bilal Ahmad Jadoon – Propsure Digital Solution Manager
Head of Engineering | Imarat Group | Bilal.ahmed@imarat.com.pk | Professional Reference
Radek Barvíř – Thesis Supervisor
Assistant Professor | Palacký University Olomouc | radek.barvir@upol.cz | Academic Reference