Ghulam Abbas Zafari

Geoinformation Specialist

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Professional Profile

Precise and dedicated geoinformation professional with solid expertise in GIS, remote sensing, and cadastral surveying. Over five years of experience in cadastral surveys and geospatial data analysis. Currently enrolled in the Master's degree program in Geoinformatics Engineering at Politecnico di Milano. Proficient in geospatial technologies for land use mapping, environmental applications monitoring (including flood monitoring and other remote sensing-based analyses), and urban planning. Skilled in Python, Java, C++, satellite image processing, and data analysis.

Professional Experience

Cadastral Survey Engineer

Ministry of Urban Development and Land, Afghanistan *March 2018 - May 2021*

- Managed work plans according to department requirements
- Conducted quality control and prepared topographic equipment for field operations
- Executed joint topographic surveys with clients
- Performed road alignment tracing and prepared as-built drawings
- Presented technical and progress reports to management

Education

Master's Degree in Geoinformatics Engineering

Politecnico di Milano, Italy *2022 – Present*

Relevant Coursework and Projects:

- **Geographic Information Systems (GIS):** Developed a landslide susceptibility map and performed hazard analysis. Practical WebGIS development using GeoServer, QGIS, PostGIS, GRASS GIS, and SQL.
- **Hypermedia Applications:** Built a website as a course project using HTML, C++, and Python. Additionally, developed a full-stack Vue3/Nuxt3 web application for a non-profit center.
- **Geospatial Data Analysis:** Applied statistical methods and data modeling to spatial datasets.
- **Data and Information Quality:** Covered data quality assessment, profiling, error detection, cleaning, and fusion for databases, logs, sensors, and social media.
- **Geospatial Processing:** Integrated spatial data science concepts, formats, and algorithms with source code development in spatial workflows.
- **Geoinformatics Project:** Designed and implemented a software system to manage and process geospatial data; included full software development lifecycle and project presentation.
- **Photogrammetry and Drone Image Processing:** Learned photogrammetric principles for 3D reconstruction and orthophoto generation. Applied drone data in digital mapping.
- **Earth Observation – Advanced:** Focused on optical remote sensing and environmental applications using ESA SNAP. Topics included classification, atmospheric corrections, band algebra,

and vegetation indices.

- **Performance Evaluation and Applications:** Modeled and evaluated performance of computing systems, with emphasis on capacity planning, simulation, and workload analysis.
- **Technologies for Information Systems:** Studied decision-making processes based on integrated data systems and advanced methodologies for building data products.
- **Business Information Systems I:** Aligned IT design with business strategies across sectors like manufacturing, utilities, and finance.
- **Pollution Measurement and Management:** Assessed water, air, soil, and waste pollution, with focus on remediation technologies and policy implications.
- **Computing Infrastructures:** Analyzed data center architectures, including cloud computing solutions emphasizing scalability, performance, and security.
- **Other Courses:**
  - **Software Engineering for Geoinformatics:** Focused on geospatial software development, requirements engineering, modular architecture, and testing.
  - **Computer Architecture and Operating Systems [I.C.]:** Covered hardware structure, memory systems, CPU scheduling, and process management.
  - **Geospatial Data Analysis [I.C.]:** Introduced advanced spatial data analytics, including mining and geostatistics.
  - **Positioning and Location-Based Services:** Focused on GNSS, mobile positioning methods, and real-time geolocation services.

Bachelor's Degree in Geodesy Engineering

Kabul Polytechnic University, Afghanistan *2010 – 2014*

- Specialization in cadastral surveying and cartography

Academic Projects

Forest Cover and Land Cover Transitions in the Mediterranean Basin

- Analyzed land cover changes (1985–2022) using Landsat and Sentinel-2
- Performed supervised classification (Random Forest)
- Calculated transition matrices and linked changes to climate trends (Copernicus)
- Visualized outputs with thematic maps and interactive dashboards (Python/Plotly)

Data Cleaning and Analysis Pipeline – Boston Crime Dataset

- Preprocessed and cleaned data using MICE imputation and Isolation Forest
- Built a neural network classifier with 91% accuracy on cleaned vs 84% on raw data

Netflix Dataset: Exploratory and Predictive Analysis

- Analyzed content by genre, type, and release trends
- Built regression/classification models using scikit-learn

SphereStats – Geospatial Python Library

- Developed an open-source library for spatial statistics and routing
- Published on PyPI with full documentation and tutorials

Air Quality Monitoring Dashboard

- Real-time dashboard using Dash/Plotly and PostgreSQL
- Visualized sensor data and historical trends interactively

Technical Skills

- **Geospatial Tools:** ArcGIS Pro, QGIS, ENVI, Google Earth Engine, PostGIS
- **Programming Languages:** Python, Java, C++, HTML, MATLAB
- **Remote Sensing:** Optical/SAR image analysis, classification, atmospheric correction
- **WebGIS:** GeoServer, Leaflet, OpenLayers, Mapbox
- **Data Science:** Machine Learning, Statistical Modeling, scikit-learn

Languages

- **Persian (Dari):** Native
- **English:** Professional Proficiency (C2)
- **Italian:** Basic Competence (B1)

References

- **Prof. Daniele Oxoli, PhD**
  Researcher – RTT
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