

# Ahtsham Mustafa Awan

Geospatial Data Scientist | GIS Developer

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## Personal Profile

Strong foundation in Landscape Dynamics, GIS & Remote Sensing concepts and principles, as well as experience with various software tools and programming Languages (Spatial Data Science and Web GIS Development).

## Education

### National University of Sciences and Technology

Islamabad, Pakistan

MS in Remote Sensing and GIS

Sept 2021 - Sept 2023

- **Courses:** Advanced Geographic Information Systems, Advanced Geodatabase and Programming, Advanced Remote Sensing and Image Processing, Natural Hazards and Disaster Management, GIS for Agriculture and Natural Resources, Spatial Data Modelling, Web GIS
- **Thesis:** Comparison of Machine Learning Classifiers to Assess Landscape Dynamics and Impact on Land Surface Temperature, Topography, and Socio-Economic Variables

### The University of Azad Jammu and Kashmir

Muzaffarabad, AJK, Pakistan

BS in Applied Geology

Oct 2016 - Feb 2021

- **Relevant Courses:** Environmental Geology, Environmental Hazards, Engineering Geology (I, II), Geomorphology, Applied Mathematics (I, II), Surveying and Drawing, General Geology, Remote Sensing and Geographical Information Systems, Geohydrology, Geostatistics, Structural Geology, Geophysics
- **Thesis:** Landslide Mapping and Spatial Distribution Analysis from Muzaffarabad to Luat, Neelum Valley, Azad Kashmir, Pakistan

## Work Experience

### Government of Pakistan (Defence Department)

Rawalpindi, Pakistan

Research Officer - GIS Development

May 2024 - Current

- Development of GIS Applications using Calcite Design System, ArcGIS JS APIs, .NET and PostgreSQL ArcGIS Server and MySQL Database.

### Pakistan Army Land Management Cell

Rawalpindi, Pakistan

GIS Officer

Jan 2024 - May 2024

- Development of Pakistan Army Land Information and Management System using leaflet, geoserver and PostgreSQL

### National University of Sciences and Technology Islamabad

Islamabad, Pakistan

Research Associate

Jul 2023 - Dec 2023

- Spatial Data Analysis using different datasets, Numerical Modelling and Simulations, Reporting and Documentation

### Chinar Mines and Minerals

Islamabad, Pakistan

GIS Analyst

May 2022 - Jul 2023

- Digital Image Processing, Land Use and Land Cover Mapping, Watersheds, Runoff Estimation, and Mineral Mapping using Hyperspectral (Hyperrion) Imagery, and Drone Imagery Processing

### Earth Explorer Pvt Limited

Islamabad, Pakistan

GIS Analyst

Oct 2021 - Apr 2022

- Digital Image Processing, Land Use and Land Cover Mapping, Watersheds, Runoff Estimation, and Mineral Mapping using, and Geological Mapping

### Pakistan Council of Research in Water Resources

Muzaffarabad, AJK, Pakistan

Intern

Dec 2020 - Feb 2021

- Water Quality Testing, Surveying and Mapping, Report Writing and Documentation

## Projects

- Simulating Coastal Inundation Vulnerability and Impact Assessment for Indus River Delta
- Efficient mapping of flood hazards, using drones and aerial imaging techniques: State of the Art and shortcomings
- Delimitation of Electoral Boundaries during inter census period: A hybrid approach integrating remote sensing and census data
- Data Management (CRUD) application using ASP.NET, Javascript, and Microsoft MySQL Database.
- Google Earth Engine Application for Land Surface Temperature Calculation using Landsat Series of Satellites
- Soil Categorization based on its Spatial Variability for enhanced fertilizer application in Rawalpindi Tehsil Pakistan
- Pre and Post Flood Monitoring of 2022 Pakistan floods using Sentinel-1 SAR data

- Mineral Identification in Chitral KPK Using Hyperspectral Remote Sensing Data, Geological Field Exploration and Geochemical Analysis
- Modeling Impact of Urbanization on Land Surface Temperature and Assessment of Surface Urban Heat Island using Landsat: A Case Study of Rawalpindi Tehsil
- Web GIS Application for Mineral Mapping in Chitral KPK using OpenLayers, postgresQL, Geoserver
- Exploration and Mapping of Placer Gold and Base Metal Deposits Along Hunza River Gilgit Baltistan
- Flood Susceptibility Mapping using GIS-AHP Multi-criteria Analysis (Nowshera, Pakistan)
- Modeling Water Quality Parameters using Landsat 8 and ASD Hyperspectral Spectroradiometer Data: A Case Study of Khanpur Dam
- Integrating Multi Datasets in Google Earth Engine for Advanced Hydrological Modeling Using the Soil Conservation Service Curve Number Method.

## Skills

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<b>Programming</b>	Google Earth Engine, Python (TensorFlow, Pandas, Geopandas, NumPy, Matplotlib Scikit-learn, Leafmap, Geemap, HyRiver), R, PHP, HTML/CSS, Bootstrap, Calcite Design System (ESRI), JavaScript (Openlayers, Leaflet, ArcGIS JS API), ReactJS, AJAX-PHP, PostgreSQL, MySQL, Geoserver, ArcGIS Server, Mapserver, MapboxGL.
<b>Software</b>	ArcGIS, ArcGIS Pro, GeoDa, eCognition, Erdas Imagine, QGIS, HEC-RAS, RAMMS, MapTiler, SAS Planet
<b>Miscellaneous</b>	TeX(Overleaf), Microsoft Office, Adobe Illustrator, Photoshop, After Effects and Premier Pro

## Certifications

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Click Certifications to verify

- Web GIS Development (Udemy)
- Spatial Data Science and Applications - Yonsei University (Coursera)
- GIS, Mapping, and Spatial Analysis Specialization - University of Toronto (Coursera)
- Spatial Data Science: The New Frontier in Analytics - ESRI Training (MOOC)
- Hyperspectral Thermal Image Unmixing - Geo University
- GIS for Climate Action (MOOC) - ESRI
- Imagery in Action (MOOC) - ESRI
- Cartography (MOOC) - ESRI
- Going Places with Spatial Analysis (MOOC) - ESRI
- Spatial Data Management with Google Earth Engine
- Big Data Analysis for Water-related Applications
- Introduction to Geospatial Data Analysis with ChatGPT and Google Earth Engine
- Active and Passive Satellite Data Analysis Using Cloud Computing for Surface Water/Flood Mapping

## Conferences and Seminars

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- National Consultative Session on SFDRR SAR Image Processing and Interpretation - SUPARCO
- Use of RS/GIS in Agriculture
- ARSET - Transforming Earth Observation (EO) Data into Building Infrastructure Data Sets for Disaster Risk Modeling (NASA)

## Volunteer Work

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- Member of Hamdard Welfare Foundation Azad Jammu and Kashmir, Pakistan
- Member of Alkhidmat Foundation, Pakistan
- Blood Chain Pakistan Member

## Languages

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<b>English</b>	Professional proficiency
<b>Urdu</b>	Native proficiency

## Referees

- **Dr. Javed Iqbal**

- **Position:** Professor
- **Association:** MS Thesis Supervisor
- javed@igis.nust.edu.pk
- **Contact:** +925190854473
- **Affiliation:** National University of Sciences and Technology, Pakistan
- Google Scholar Profile

- **Dr. Ejaz Hussain**

- **Position:** Associate Dean (Professor)
- **Association: Co-supervisor**
- ejaz@igis.nust.edu.pk
- **Contact:** +925190854400
- **Affiliation:** National University of Sciences and Technology, Pakistan
- Google Scholar Profile

- **Dr. Ali Tahir**

- **Position:** HOD Department Of RS & GIS
- **Association: Instructor**
- ali.tahir@igis.nust.edu.pk
- **Contact:** +9251874112
- **Affiliation:** National University of Sciences and Technology, Pakistan

- **Dr. Salman Atif**

- **Position:** Associate Professor
- **Association: Instructor**
- salman@igis.nust.edu.pk
- **Contact:** +92051908544
- **Affiliation:** National University of Sciences and Technology, Pakistan