

MANJAR ALAM

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**PROFILE SUMMARY**

GIS and Geography professional with 3+ years of experience in Remote Sensing and GIS, specializing in ArcGIS Pro, geodatabase management, spatial analysis, and climate-environmental mapping. Proficient in large-scale data management vector/raster processing, georeferencing, and high-quality cartographic production. Experienced in Google Earth Engine, Python, and Web GIS workflows (ArcGIS Online). Strong interest in cultural heritage, environmental analysis, and spatial decision support.

WORK EXPERIENCE**Young Profesional-II (Remote Sensing and GIS) Indian Agricultural Statistics Research Institute (ICAR-IASRI) (March, 2025 to Present)**

Project: Agri-Drone in ICAR: ICAR-IASRI Component (March-25 to September-25)

Project: Pilot Study to development of Sampling Methodology or Cost of Cultivation of Minor Crops in India (October-25 to Present)

Role and Responsibilities: Utilizing remote sensing, GIS to process and analyze high-resolution drone imagery and satellite imageries for crop monitoring.

Key Tasks:

- Managed and supported GIS workflows on the ELISS WebGIS portal, including data upload, visualization, and spatial data management
- Processed drone imagery to extract agricultural features such as crop health, vegetation indices (NDVI, SAVI), and field boundaries using remote sensing techniques.
- Supported drone-based surveys for field experiments and collaborated with ICAR institutes to collect, validate, and interpret geospatial data.
- Forestry & Land Use Change Monitoring (LULC classification, NDVI/LSWI, biomass mapping).
- Developed geospatial workflows using Python, PIX4Dmapper, Erdas, Arcmap, Google Earth Engine, and QGIS for pre-processing.
- Created thematic maps for crop classification and Yield Estimation using Crop Cutting Experiments (CCE), yield estimation to support data-driven decision-making in agriculture.
- Prepared maps and visualizations for the Agricultural Research Data Book 2025, ICAR.

Project Assistant (Remote Sensing and GIS) Indian Agricultural Research Institute (ICAR-IARI) (Jan, 2024 to Feb, 2025)

Project: National Mission for Sustaining Himalayan Ecosystems

Role and Responsibilities: Conducting research on groundwater and surface water changes and climate scenarios over the Indian Himalayas. Utilizing Google Earth Engine, Python, and ArcMap to analyze and interpret geospatial data.

Key Tasks:

- Mapped Groundwater Recharge Potential Zones in Uttarakhand, India, using Multi-Criteria Decision-Making techniques such as **AHP and ANP**, as well as machine learning techniques like **Random Forest and XGBoost**.

- **Conducted research on groundwater recharge potential zones and surface water changes in the Indian Himalayas**, assessing how climate variability impacts regional water resources.
- **Analyzed climate scenarios and their effects on forest cover and agriculture in mountainous regions**, focusing on temperature fluctuations, precipitation patterns, and extreme weather events Heatwaves and cold waves to inform climate adaptation strategies.
- Utilized Google Earth Engine, Python, and ArcMap to process and visualize extensive geospatial datasets, developing tools to support climate resilience in agricultural systems.
- Developed a comprehensive **database for agricultural contingency planning across India** with ICAR-CRIDA data, including cropping plans to guide climate-sensitive agriculture.
- **Regridded tmin, tmax, and rainfall data from the Indian Meteorological Department (IMD)** to ensure spatial consistency for advanced climate analysis.
- Georeferenced and digitized **local governance data from the Ministry of Panchayati Raj**, creating a nationwide database for integrated climate and resource management.
- Generated **scripts for SPI (Standardized Precipitation Index) and SPEI (Standardized Precipitation Evapotranspiration Index) calculations to assess drought risk and water stress levels**, enhancing understanding of water variability, climate impacts, and agricultural productivity across regions.
- **Mapping well locations for groundwater research** and analyzing **Census data** to map tribal demographics.
- Collaborating with **NMSHE and NICRA** teams, providing essential geospatial datasets.
- Built and maintained **project geodatabases**, ensuring proper metadata, naming conventions, and directory structure.
- Produced **high-quality thematic maps, figures, and charts** for technical reports and research publications.
- Conducted **QA/QC checks** to ensure spatial accuracy and data integrity.

Professional Development (Sep, 2023 to Dec, 2023)

Focused on enhancing **Remote Sensing & GIS skills** (ArcGIS Pro, ArGIS Online, QGIS, Google Earth Engine, Python) and improving **data visualization and communication skills**.

GIS Executive Aptara Techbooks (Dec, 2022 to Aug, 2023)

Project: Geofacets Elsevier

Role and Responsibilities: Managed various GIS tasks including georeferencing, digitization, map preparation, and cartographic design for the Geofacets project.

Key Tasks:

- Managed GIS tasks including georeferencing, digitization, and map preparation for the Geofacets project.
- Created high-quality maps and performed georeferencing to align maps with spatial data.
- Utilized Excel for managing and processing geospatial data.
- Collaborated with the team to ensure accuracy and completeness of cartographic products.

INTERNSHIPS EXPERIENCE

GIS Research Intern National Institute of Hydrology Roorkee (Mar,2022 to Sep,2022)

Project: Groundwater Recharge Potential Zone Mapping in Udham Singh Nagar, Uttarakhand

Key Tasks:

- Conducted a comprehensive site suitability analysis for groundwater recharge zones using advanced geospatial techniques.

- Applied remote sensing and GIS to assess and map groundwater recharge potential areas, incorporating layers such as land use, soil type, slope, and rainfall.
- Analyzed soil erosion risk using the Revised Universal Soil Loss Equation (RUSLE) model, integrating satellite data for accurate erosion mapping.
- Contributed to spatial data management and visualization, creating high-quality maps and reports to support sustainable groundwater management strategies.
- Collaborated with hydrology experts to interpret results and refine geospatial methodologies for improved accuracy.

GIS Analyst Intern Acquaint Geotech (Jul 2021 to Sep 2021)

Project: Bing Maps

Key Tasks:

- Performed geoprocessing tasks to support data integration and quality assurance for Bing Maps.
- Conducted GIS analysis and managed spatial data to improve map accuracy and usability.
- Assisted in remote sensing tasks, such as processing and analyzing satellite imagery, to extract relevant geospatial information.
- Utilized GIS software and tools to conduct spatial analysis, data visualization, and map production.

ACADEMIC QUALIFICATIONS

Name of the Exam	Board/University	Year Passing of	Marks (%)
M.Sc. Remote Sensing and GIS Applications	Aligarh Muslim University	2022	86%
B.A/B.Sc. Geography	Jamia Millia Islamia	2020	72%
Intermediate (10+2)	SVBP SBV Tughlakabad Extn, New Delhi, CBSE	2017	77%
Matriculation (10)	SVBP SBV Tughlakabad Extn, New Delhi, CBSE	2015	60%

RESEARCH / PROJECT WORK

- **AHP-Based Site Suitability Analysis:** Evaluated groundwater recharge potential zones using geospatial techniques in Udham Singh Nagar, Uttarakhand.
- **Assessment of Soil Erosion:** Applied the RUSLE model for soil erosion analysis in the Ramganga Basin.
- **Urban Change Detection and Land-Use Mapping:** Analyzed urban changes and land-use patterns in Delhi.
- **Interactive world population dashboard:** visualizes population data by country in a user-friendly format. App Link: <https://manjar-worldpopulationdashboard.streamlit.app/>

SKILLS

- **Geographic Information Systems (GIS):** Spatial analysis, Enterprise GIS solutions, Geo-Analytics, GIS data processing, Cadastral mapping, Cartography (Map layout design, symbology, map production).
- **Satellite Image Processing:** Crop yield estimation, flood detection, forest cover mapping.
- **Programming:** Python (GDAL, Rasterio, Geopandas, Plotly, Matplotlib, Richdem, Numpy, Pandas, Xarray, IMDLIB), R (statistical computing, data analysis).

- **Land Research:** Cadastral maps, revenue records, land ownership identification, land parcel analysis.
- **Raster & Vector Processing:** Data conversion, spatial data management, georeferencing, digitization and geospatial data integration.
- **Climate Data Handling:** Managing and analyzing multidimensional NetCDF climate data, spatial interpolation, and time-series analysis.
- **Agriculture Modeling Software:** Info-Crop, DSSAT, APSIM.
- **Data Management and Visualization:** ModelBuilder workflows, Attribute editing, Metadata & data standards, QA/QC format conversion, Microsoft Excel, Power-Point, Panoply.
- **Remote Sensing:** Sentinel-1, Sentinel-2, MODIS, Landsat, SAR, Optical data analysis, DEM, Drone Image Processing.
- **Geospatial Tools:** Google Earth Engine, ArcGIS Pro (advanced geoprocessing & editing), ArcGIS Online, ArcGIS StoryMaps, ArcGIS Instant App, ArcGIS Dashboard, QGIS, ERDAS Imagine, ENVI, PIX4Dmapper.
- **AI/ML Techniques:** Random Forest and XGBoost (Applied in Land use and Landcover classification and Groundwater Recharge Potential Zones Mapping).
- **Data Analysis:** Spatial statistics, Time-series analysis, Cloud computing (GEE).
- **Web-GIS Basics:** Open layers, leaflet, mapbox, HTML, CSS, Java, Geoserver postgres, PostGIS, SQL.
- **Presentation & Communication:** Project reports, research papers, and strategic plans. Delivering insights through reports, PowerPoint presentations, OriginPro, Mendeley, Zotero.

PUBLICATIONS

Research Article:

- **Land degradation vulnerability assessment in a semi-arid ecosystem in India using geospatial techniques: A case study of Nashik, Maharashtra,** Soil Degradation, Desertification and Restoration: Application of Geospatial Technology and Modeling, https://link.springer.com/chapter/10.1007/978-3-031-92277-0_9
- **Drone-Based Crop Yield Estimation Using Remote Sensing and Machine Learning:** https://www.researchgate.net/publication/397322946_Drone-Based_Crop_Yield_Estimation_Using_Remote_Sensing_and_Machine_Learning
- **Integrating Statistical Analysis and Decision-Making to Assess Flood Susceptibility in Indian Mountainous Agroecosystems,** Journal of Earth System Sciences, <https://link.springer.com/article/10.1007/s12040-026-02781-9>
- **Analyzing soil loss dynamics in the Indian Himalayan Region using geospatial approach,** Land Degradation & Development, <https://link.springer.com/article/10.1007/s41324-025-00667-4>
- **Comparative Analysis on Groundwater Recharge Potential Zone Mapping using Multi-Criteria Decision Making (MCDM) and Machine Learning (ML): A Comparison of AHP, ANP, Random Forest, and XGBoost,** Remote Sensing Journal (Under Review)
- **Identification of groundwater recharge potential zone using geospatial approaches and multi criteria decision models in Udham Singh Nagar district, Uttarakhand, India,** Advances in Space Research, <https://doi.org/10.1016/j.asr.2024.10.039>
- **Geospatial and AHP Techniques for Selection of Potential Zones for Water Harvesting in Dehradun, Uttarakhand** J. Indian Water Resour. Soc., Vol. 43, No. 1 & 2, Jan. & Apr. 2023, IX International Groundwater Conference (IGWC-2022) <https://iwrs.org.in/43-1/>
- **Morphometric Characterization of Netravati River Using Geospatial Tools** 27th International Conference on Hydraulics, Water Resources, Environmental and Coastal

CONFERENCE PRESENTED

1. **IIT Bombay-AICTE Mapathon**, *Presented Topic: Time Series Analysis of NDVI using Google Earth Engine, Jaunpur, Uttar Pradesh.*
2. **Geo Innovation Challenge at National Institute of Hydrology, Roorkee**, *Presented Topic: Identification and mapping of surface water using Geospatial Technology.*
3. **IIT Bombay-AICTE Mapathon**, *Presented Topic: Mapping of Air Quality Parameters in Delhi during Diwali month, 2020).*

COURSES COMPLETED

Year	Involvement/Participation
2025	Statistics for GIS Professionals (UDEMY)
2025	Drones and Drone Data Processing and QGIS for Land Management: Centre of Excellence in Land Administration and Management, Administrative Training Institute (ATI), Government of Karnataka
2025	GEO WEB APP BUILDING WITH OS TOOLS (Geoversity, University of Twente, ITC Netherland)
2025	Advanced Archaeological Remote Sensing: Site Prospection, Landscape Archaeology and Heritage Protection in the Middle East and North Africa Durham University
2025	WINTER-WATER-WARMING: CANADIAN SAR APPLICATIONS (EO College)
2025	Web GIS development course (UDEMY)
2025	UAV for Precision Agriculture (Geoversity, University of Twente, ITC Netherland)
2024	21 Days Advances in Simulation Modelling and Climate Change Research towards Knowledge Based Agriculture Info-Crop, DSSAT, APSIM (ICAR-IARI)
2024	12 Days Geospatial Python Bootcamp (Tommyscodebase)
2024	Spatial Data Science: The New Frontier in Analytics (ESRI)
2024	Climate Data Science & Modeling (GITHUB)
2024	Google Earth Engine (Spatial-Thoughts)
2023	Spatial Analysis & Geospatial Data Science in Python, Online learning program by (UDEMY)
2023	Advanced Microsoft Excel, Online learning program by (Simplilearn)
2022	Overview of Geoprocessing using Python Certification Edusat outreach E-learning program, Organized by IIRS
2022	Crop Yield Estimation using Remote Sensing and GIS ArcGIS, Online certification program by UDEMY (2022)
2021	ArcGIS Level 1: GIS & ArcMap, ArcCatalog, Online certification program by UDEMY, ArcPy for ArcMap Level 1: Python Programming for ArcGIS, Online certification program by UDEMY
2021	6-week Cartography MOOC, Online certification program by ESRI

2020	Completed 21 days Online GIS Training Program using QGIS, Organized by the Department of Geography, School of Earth Sciences, (Central University of Karnataka)
2017	Basics of Remote Sensing, GIS, GNSS, Online certification program by IIRS

ACHIEVEMENTS IN EXTRACURRICULAR ACTIVITIES

Year	Involvement/Participation/Achievements
2019	Participated in Nukkad Natak (Street Drama) Social Awareness Program
2018	Active Volunteer- College Fresher/Farewell Program, Jamia Millia Islamia
2017	Awarded 1 st Position in School Board Examination (School Topper)

FIELD OF INTEREST

- Optical and Microwave Remote Sensing Techniques **for environmental and resource monitoring**
- Machine Learning **in Geospatial and Environmental Applications**
- Agriculture and Climate **Interactions, focusing on the impact of climate variability on crop productivity**
- Hydrology and **Water Resources Management, with emphasis on groundwater recharge and surface water dynamics**
- Geosciences **with a focus on terrain analysis, soil erosion, and landform processes**

PERSONAL INFORMATION

Name : Manjar Alam
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 Nationality : Indian
 Marital Status : Unmarried

REFERENCES

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 National Institute of Hydrology, Roorkee
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DECLARATION

I hereby declare that the information furnished above is true to the best of my knowledge. I bear all responsibilities for the correctness and accuracy of the above-mentioned particulars.

Place: **New Delhi, India**

Date: **29th April 2026**

Manjar Alam
Signature