RAHUL DEBNATH

M.Tech Geoinformatics (Pursuing)

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Google Scholar Cooch Behar, West Bengal

PROFESSIONAL SUMMARY

M.Tech Geoinformatics student at the University of Madras with practical experience in GIS, remote sensing, UAV photogrammetry, spatial analysis and field surveys. Contributed to urban flood-risk assessment, precipitation δ18O isoscape modelling, GeoAI agent development and geospatial research. Skilled in GIS software, Python-based raster analytics, geospatial modelling and digital mapping. Interested in GIS / remote-sensing analyst roles in environmental, climate and urban-planning applications.

PROFESSIONAL EXPERIENCE

GIS Intern *2026*

PEA Design Consultant Pvt. Ltd.

- Project: Flood Risk Assessment and Mitigation Plan for the City of Valsad, Gujarat.
- Converted CAD drawings to GIS data, georeferenced maps and prepared the Valsad city base map.
- Used QField mobile GIS for field data collection and spatial documentation.

Research Intern *2026*

Divecha Centre for Climate Change, Indian Institute of Science (IISc), Bengaluru | Supervisor: Prof. Prosenjit Ghosh

- Project: Development of a Precipitation $\delta^{18}O$ Isoscape Map of India: spatial prediction and analysis of rainfall $\delta^{18}O$ using secondary data from 47 stations.
- Carried out data collection, regression modelling, geostatistical analysis and machine learning model testing for spatial prediction.

Surveyor & Assistant Technician *2023-2025*

Tropical Institute of Earth and Environmental Research (TIEER), Midnapur, West Bengal

- Carried out field surveys in Jhargram using GPS/DGPS, Total station, Theodolite and Prismatic Compass.
- Assisted spatial data collection and environmental assessments for rural development planning.

EDUCATION

M.Tech in Geoinformatics *2025-2027*

University of Madras

- Coursework: Photogrammetry and Remote Sensing, Modern Surveying, GIS, Python and R, Cloud Computing, GeoAI, Big Data Analytics, Geostatistics.

M.Sc in Geography *2023-2025*

Sadhu Ramchand Murmu University of Jhargram

- Grade: Class-I (A). Special paper: Tourism Geography.

B.A in Geography *2020-2023*

Sitalkuchi College, Cooch Behar Panchanan Barma University

- Grade: Class-I (A). Special paper: Cartography & Urban Geography

ACADEMIC PROJECTS

GeoSense Agent 2.0 - GeoAI-powered geospatial analysis and 3D visualisation (ongoing) | Mumbai, India

- Developed a LangGraph-based GeoAI agent integrated with MCP tools.
- Worked with Python, FastAPI, Claude API, Streamlit and CesiumJS for geospatial analysis and 3D visualisation.
- Explored flood-risk mapping, LiDAR, Sentinel-2 imagery and deep-learning techniques.

Soil Erosion Risk Assessment using RUSLE in Google Earth Engine | Dulung River Basin, West Bengal | M.Sc. dissertation, 2025

PUBLICATIONS

Co-author publications ⁎ Geospatial and Earth System Science, Vol. 1, Issue 2 (2026)

1. GIS-Based Assessment of Urbanisation Impacts on Flood Risk and Stormwater Infrastructure in Chennai Metropolitan Area. **R. Debnath** and P. Barman.
2. Estimation of Soil Erosion and Risk Assessment using the RUSLE Model in Google Earth Engine (GEE): A Case Study of the Dulung River Basin, West Bengal, India**. R. Debnath**, P. Mahata and K. Dandapat.
3. Spatial Assessment and Mapping of Forest Fire Susceptibility Using Multi-Criteria Decision Analysis in Jhargram and Paschim Medinipur Districts, West Bengal. P. Mahata, P. Barman, N. Mahata and **R. Debnath**.
4. Mapping Coastal Vulnerability in the Indian Sundarbans: An Integrated GIS and DEM-Based Assessment of Land Cover Change and Sea-Level Rise Inundation in South 24 Parganas. P. Barman, **R. Debnath** and M. Kisku.

CONFERENCE & SEMINAR PRESENTATION

- **Eight-Day Multi-Disciplinary International Seminar (Hybrid Mode) | 21–28 August 2026**

  Presented the research paper: "Integrated Coastal Vulnerability Assessment of the Indian Sundarbans Using GIS, Remote Sensing, and DEM-Based Inundation Modelling, South 24 Parganas District, West Bengal, India."
- **International Seminar on Village Tourism and Sustainable Rural Development | 27 Sep 2024**

  Participated; organized by TIEER and Global Forum for Sustainable Rural Development, South Asia, Jamboni, Jhargram.

CERTIFICATIONS & TRAINING

Drone Image Processing - Bengal Institute of Remote Sensing and GIS | 13–27 Jan 2026

Geospatial Raster Data Analytics in Python - LinkedIn Learning | Completed 6 Apr 2026

Satellite Data Analysis for Weather and Climate - Indian Institute of Tropical Meteorology (IITM), Pune | 13–17 Mar 2026

Satellite Applications for Climate Change - Center for Sustainable Environment and Education (CSEE) | 3 May 2026.

The Systems Approach to ArcGIS: An Introduction – Esri Training | Dec 2025.

Advance Diploma in Computer Application (ADCA) - Bharatiya Yuva Computer Saksharata Mission | 2019 | Class-I (A).

Tally ERP 9 - STP Computer Education | 2024 | Class-II (B).

TECHNICAL SKILLS

GIS & Remote Sensing: QGIS, ArcGIS, ArcGIS Pro, SAGA GIS, Google Earth Engine, Global Mapper, spatial analysis, raster processing and thematic mapping.

Programming & Data Analysis: Python, R, MATLAB, GeoPandas, Rasterio, GDAL, NumPy, regression modelling and geostatistics.

UAV & Photogrammetry: Pix4Dmapper, Agisoft Metashape, point-cloud processing, DSM/DTM and orthomosaic generation.

GeoAI & Web GIS: CNN, U-Net concepts, semantic segmentation, LangGraph, MCP, FastAPI, Streamlit and CesiumJS.

Field Survey: Total Station, DGPS, GPS and QField.

LANGUAGE

ENGLISH, HINDI, BENGALI, RAJBANSHI, ASSAMESE