Suman Bhowmick

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Research Interest

My research interests are rooted in hydrology, including isotope hydrology, groundwater–climate interactions, and the hydrological response of landscapes to land use changes. I am also engaged in agricultural geospatial modeling, climate–soil interactions, river course changes, and sediment transport analysis. My current focus lies in integrating remote sensing and machine learning approaches for modeling soil fertility, erosion, and environmental dynamics.

Education

M.A./M.Sc in Geography   **2022–2024**
North-Eastern Hill University, Shillong
CGPA: 8.00

B.Sc in Geography   **2019–2022**
Acharya Prafulla Chandra College, New Barrackpur
CGPA: 8.46

Technical Skills

GIS	: ArcGIS Pro, ArcGIS, QGIS
Programming	: R, Python, LaTeX, Google Earth Engine
Data Analysis	: SPSS, Stata, NVivo, TerrSet
Image Processing	: Satellite Imagery, Aerial Photography
MS Office	: Excel (Climate Data Processing), Word, PowerPoint
Citations Manager	: Mendeley, Zotero

Projects & Web Applications

- **Global Forest Monitoring App**   *Since July 2025 (Ongoing)*
  Developing an interactive web application for monitoring global forest cover changes using satellite imagery. Implementing data processing scripts and visualizing forest change metrics.
  Technologies: Google Earth Engine (JavaScript API), Landsat & MODIS data.
  Link: View App

- **Personal Portfolio Website**   *May 2025 – Present (Ongoing)*
  Designed and developed a professional portfolio to showcase GIS projects, research, and technical skills. Implemented responsive design and interactive features for enhanced user experience.

Technologies: HTML, CSS, JavaScript, GitHub Pages.
Link: [View Portfolio](#)

Field Experience

Ri-Bhoi District, Meghalaya   **Feb 2024 – Apr 2024**

- Conducted field visits for systematic soil sampling across diverse topographic units.

- Used GPS devices for geotagging and elevation measurement of all sampling points and preparation of road map.

- Collected field notes on vegetation, barren and land use for each location to support GIS-based LULC modeling.

Research Engagement

Remote Sensing Application for Flood Hazard Assessment: A Study in the Lower Gangetic Plain of West Bengal   *Aug 2025 – Present*
Collaborative Research with [Dr. Abhishek Ghosh](#), North-Eastern Hill University
Role: Research Collaborator

- Applying satellite remote sensing and GIS-based modelling to map and monitor flood hazards.

Spatial Modeling of Soil Degradation and Its Impact on Agricultural Sustainability in the Lower Ganga Delta   *June 2025 – Present*
Student-led collaborative research (team of five: three master's graduates and two PhD candidates) **Role**: Lead Researcher

- Focused on evaluating spatial patterns of soil degradation using remote sensing-based indicators.
- Analyzed long-term land use change and its effect on agricultural resilience using multi-temporal satellite data.

Workshops and Training Programs

- **Transforming GIS with Python Integration**   Jul 2025
  Lecture by Krishna G. Lodha (GIS Enthusiast, Ronten Grass)   Online

- **AI-ML for Earth Observation: Ground Segment Operations, Data Processing & Applications**   Jun 2025
  Bhoonidhi Workshop Series, NRSC, ISRO (1-day Workshop)   Online

- **Research Ethics in the Digital/AI Age: What is Plagiarism?**   Jun 2025
  Webinar by Cecilia K. Y. Chan (University of Hong Kong)   Online

- **Deep Learning for SAR Image Processing**   Jun 2025
  Lecture by Dr. Florence Tupin (Télécom Paris), IEEE GRSS and IEEE Madras SectionOnline

- **Road Map of Future Geographies: Drone Technology and Geo-Spatial Analysis**
  Mar 2019
  Department of Geography, Adamas University (2-day Workshop)   Kolkata, India

Online Courses

- **Python for Data Science** — Jul–Aug 2025
  NPTEL (IIT Madras) — Instructor: Prof. Raghunathan Rengasamy
  Equipped participants with Python programming skills for solving data science problems. Covered Spyder basics, Python data types, NumPy, Pandas, data visualization (Matplotlib, Seaborn), control structures, and a case study.

- **Writing in the Sciences** — Jun–Jul 2025
  Coursera (Stanford University) — Instructor: Prof. Kristin Sainani
  Covered scientific writing structure, clarity, and publication ethics through hands-on assignments.

- **Remote Sensing Data Analytics for Crop Production Forecasting** — Jun 2025
  IIRS-ISRO (5 Days, Course No. 168, Coordinator: Dr. N. R. Patel) — *View Certificate*
  Covered RS-based crop discrimination, yield estimation, and UAV-assisted crop simulation techniques.

- **Archival and Access of the Space Science Data** — Jun 2025
  IIRS-ISRO (5 Days, Course No. 167) — *View Certificate*
  Introduced satellite data processing, science data archival practices, and remote sensing case studies in astronomy and in-situ observations.

- **Academic and Research Report Writing** — Aug–Oct 2023
  NPTEL SWAYAM (NITTTR Kolkata) — Instructor: Dr. Samir Roy
  Focused on academic writing, literature review, citation styles, and document formatting using LaTeX.

Honors and Awards

- **UGC-NET Qualified** – December 2024 and June 2025 (Ph.D. Only)

- **Top Rank Holder in M.Sc. Geography**, NEHU – 2024

Other Certifications and Extracurricular Engagement

- **NCC Combined Annual Training Camp (CATC-12)** — Oct–Nov 2017
  31 Bengal BN NCC, Matiaburj High School — Kolkata, India

- **Information Technology Application** — Jan–Jun 2017
  Youth Computer Training Centre, Govt. of West Bengal — Kolkata, India
  Certified by Hewlett Packard Enterprise

- **Yoga Training Programme (1 Month)** — May–June 2016
  Ramakrishna Mission Vivekananda University, Belur Math — Kolkata, India
  Sponsored by CCRYN, Ministry of AYUSH

Languages

- Bengali (Native), English (Fluent), Hindi (Fluent)