

Md Khadem Ali

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About Me

I am currently pursuing a Bachelor's degree in Geography and Environment from a college affiliated with the National University of Bangladesh. I have a strong interest in GIS, Remote Sensing and Data Science. I enjoy working with spatial data, satellite imagery and geospatial analysis tools like QGIS, ArcGIS and Google Earth Engine. I am also skilled in R, Python and use libraries such as pandas, geopandas, rasterio and scikit-learn for data analysis and visualization.

Education

National University of Bangladesh

Pabna

B.Sc in Geography and Environment, SMMAC

2022–2023

Gained foundational knowledge in physical and human geography, environmental science, and spatial analysis. Developed research skills through coursework, fieldwork, and data interpretation projects.

St. Josephs School and College

Natore

HSC in Science

2020–2021

Represented the college in science fairs and innovation challenges, earning multiple accolades, while organizing seminars, workshops, and events as a key member of the college science club.

Skills

GIS and Remote Sensing: QGIS, ArcGIS, GEE

Programming: HTML, C++, JavaScript

Academic: MS Word, MS PowerPoint, MS Excel

Data Analysis: Python (*Numpy, Matplotlib, Geopandas, Pandas*), R

Projects

1. NDWI-based Water Body Mapping and LULC Classification for Natore District: Developed as part of a recruitment evaluation for the position of Program Executive under the Wetland Conservation Program, supervised by SERC Bangladesh. Demonstrated remote sensing skills using Sentinel-2 imagery (April–May 2025) for NDWI calculation, water body extraction, and supervised land use/land cover (LULC) classification using ArcMap 10.8 and QGIS 3.42.3. Although the final classified raster could not be generated due to technical issues, preprocessing, polygon digitization for five land cover classes, and training data preparation were successfully completed. [View project on Google Drive.](#)

2. Flood Risk Mapping of Natore District, Bangladesh: Developed a flood risk map for Natore District using Google Earth Engine. The project integrated Sentinel-1 SAR data, SRTM elevation

data, and Sentinel-2 NDVI to assess flood-prone areas based on water presence, elevation, and vegetation. Risk zones were categorized as low (green), medium (yellow), and high (red) to support disaster preparedness. [View project on GitHub](#).

3. Urbanization and Infrastructure Analysis for Natore District: Analyzed urban growth and infrastructure development in Natore District using satellite imagery and spatial data. The project explored the relationship between population density and urban expansion to support planning and development initiatives. [View project on GitHub](#).

4. NDVI Analysis of Natore Zilla: Conducted NDVI-based vegetation health analysis for Natore Zilla using Sentinel-2 imagery and Google Earth Engine. The project visualized vegetation distribution patterns to support sustainable agriculture and environmental management. [View project on GitHub](#).

5. NDVI Analysis of Khulna-Sundarbans Region: Performed NDVI analysis of the Khulna-Sundarbans region using Landsat 8 imagery to study vegetation health and land cover changes in 2022. The study highlighted areas of dense forest, stress, and deforestation. [View project on GitHub](#).

Professional Experience

Taranga Science Club	Natore
<i>Magazine Sub-Editor, IT and Project Specialist</i>	<i>2015–Present</i>

- Coordinated and contributed to the publication of the club's science magazine, ensuring high editorial standards.
- Specialized in designing and managing innovative science projects showcased at festivals and Olympiads.
- Played a key role in the IT team, overseeing digital infrastructure, event management software, and online promotions.
- Actively supported the organization of science festivals and Olympiads, fostering STEM (Science, Technology, Engineering and Mathematics) education and outreach.

Polash Cadet School	Pabna
<i>Assistant Teacher</i>	<i>14 May, 2024–31 May, 2025</i>

- Developed and implemented age-appropriate lesson plans, promoting active participation and academic growth.
- Cultivated strong relationships with students, parents and colleagues to enhance classroom dynamics and school culture.
- Assessed student progress through regular evaluations, providing constructive feedback and individualized support.

Languages

Bengali: Native
English: Fluent
Urdu: Intermediate

Interests

Professional: Machine Learning, GIS and Remote Sensing, Programming, Teaching
Personal: Book, Movie, Writing, Traveling, Photography, Chess