

WORKSHOP



VISVA-BHARATI

A Central University
Institute of National Importance
UNESCO World Heritage Site

Advanced Geospatial Technologies:

Machine Learning, Unmanned Aerial Vehicles
and Contemporary GIS Practices

📅 13–14 December, 2025

📍 DEPARTMENT OF GEOGRAPHY, VIDYA-BHAVANA, VISVA-BHARATI
SANTINIKETAN, WEST BENGAL

Hands-on Training

- DRONE OPERATION WITH GIS INTEGRATION
- GENERATION OF 3D MODELS OF BUILDING
- SPATIAL STATISTICS

Registration Details

Student:	Rs. 500/-
Research Scholar:	Rs. 750/-
Academics & Professionals:	Rs. 1000/-

Experts from

- IIRS-ISRO, DEHRADUN
- CAD-GIS CENTRE, GoWB
- VISVA-BHARATI, SANTINIKETAN



Google form link: <https://forms.gle/UDq4M4GX2PfKkxoy6>

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Workshop Report

Advanced Geospatial Technologies: Machine Learning, Unmanned Aerial Vehicles and Contemporary GIS Practices

Introduction

A two-day workshop on *Advanced Geospatial Technologies: Machine Learning, Unmanned Aerial Vehicles and Contemporary GIS Practices* was successfully organised by the Department of Geography, Vidya-Bhavana, Visva-Bharati, Santiniketan, on 13–14 December 2025. This workshop aimed to familiarise participants with recent advancements in geospatial technologies, including cloud-based geodata processing, GIS programming, drone applications, photogrammetry, spatial statistics, and machine learning. The programme was designed to integrate conceptual understanding with hands-on training sessions, enabling participants to develop a clearer and more comprehensive understanding of advanced geospatial technologies.

Day 1 Proceedings (13th December, 2025)

i. Inaugural Session

The workshop commenced with an inaugural session that included the lighting of the lamp and an inaugural song, following participant registration. The welcome address was delivered by the Head of the Department of Geography, Prof. Manjari Bhattacharji, who highlighted the importance of geospatial technologies in contemporary geographical research and policy planning. The context of the workshop was set by the Joint Coordinator, Dr. Amit Chatterjee, who outlined the objectives, structure and expected outcomes of the programme. The inaugural session was further enriched by addresses by the Chief Guest, Prof. Adinath Majee, Coordinator, IQAC, Visva-Bharati, Santiniketan and the Principal of Vidya-Bhavana, Prof. Sirajul Islam, who emphasised the growing relevance of interdisciplinary approaches integrating GIS, remote sensing and data science.

ii. Lead Lecture

The lead lecture was delivered by Dr. Harish Karnatak, Scientist and Engineer, SG, IIRS-ISRO, on “Recent Trends in Application of Geospatial Technology with Emphasis on Cloud and AI-based Geodata Processing,” which provided valuable insights into emerging platforms, big geospatial data handling, and the integration of artificial intelligence in spatial analysis. The session was highly informative and interactive, benefiting both beginners and advanced users of geospatial tools.

The session was concluded with a vote of thanks by Prof. Premangshu Chakraborty.

iii. Technical Sessions

Session I (11:30–12:00 hrs): Dr. Poushali Roy, Assistant Professor, Department of Geography, Visva- Bharati, Santiniketan, delivered a lecture on the “Application of Geospatial Technology in Environmental Monitoring Aspects”. The session focused on the use of remote sensing and GIS for environmental assessment and resource monitoring.

Session II (12:00–13:00 hrs): Ms. Mitali Mandal, Research Analyst, SkyMap Global, conducted a session on “Integrating GIS with Programming Knowledge: Google Earth Engine (GEE) and its Applications”. Participants were introduced to cloud-based spatial analysis and practical applications of GEE for large-scale environmental data processing.

Session III (13:00–13:30 hrs): A hands-on training session on drone flying was conducted by Mr. Sourav Mondal, subject matter specialist in plant protection, Rathindra Krishi Vigyan Kendra, Visva-Bharati. Participants gained practical exposure to drone operation principles, safety measures and basic flight controls.

The session was followed by hands-on training post-lunch.

Session IV (14:15–17:00 hrs): Dr. Bhaskar Das, Assistant Professor, Department of Geography, Visva-Bharati, conducted an intensive hands-on training on “Close Range Photogrammetry and 3D Mapping”. The session covered data acquisition techniques, image processing workflows and the generation of 3D spatial products, using Agisoft Metashape Software.

Session V (17:00–18:00 hrs): Dr. Debaditya Barman, Assistant Professor, Department of Computer & System Sciences, Visva-Bharati, delivered a lecture on “Machine Learning: Concepts and Applications”, highlighting the relevance of machine learning algorithms in spatial data analysis and geospatial modeling.

Day 2 Proceedings (14th December, 2025)

The day began with continuing technical sessions.

i. Technical Sessions

Session VI (09:00–11:00 hrs): Mr. Ayan Ghosh, IT Personnel, Special Investigation Division, CAD GIS Center, Public Health & Engineering Department, Govt. of West Bengal, conducted a session on “Fundamentals of Drone and Hands-on Data Collection”. The session provided practical training on drone-based data acquisition techniques and field-level applications.

Session VII (11:10–13:15 hrs): He led a session on “Drone Data Processing with GIS Integration”. Participants learned workflows for processing drone imagery and

integrating the outputs into GIS platforms for spatial analysis using Agisoft Metashape Software.

Session VIII (14:00–17:00 hrs): Dr. Indrita Saha, Assistant Professor, Department of Geography, Visva- Bharati, Santiniketan, conducted a hands-on training on “Integrating Spatial Statistics with GIS”. The session utilized Geoda software and focused on spatial analytical techniques, statistical interpretation, and their applications in geography.

ii. **Valedictory Session**

The workshop concluded with a valedictory session, where the speakers reflected on the key learnings from the two-day programme and emphasised the importance of continuous skill development in geospatial technologies. Participants shared their feedback, expressing appreciation for the balanced combination of theory and practical training.

Outcome of the Workshop

The workshop successfully enhanced participants’ understanding of advanced geospatial tools and techniques, with around 60 participants comprising both in-house and external attendees, including students, research scholars and professionals. It facilitated hands-on exposure to drones, photogrammetry, cloud-based GIS platforms and machine learning applications. The programme also encouraged interdisciplinary thinking and fostered academic interaction among participants and resource persons.

Conclusion

The two-day workshop on *Advanced Geospatial Technologies* was a significant academic initiative of the Department of Geography, Vidya-Bhavana, Visva-Bharati. The well-structured sessions, experienced resource persons, and practical orientation made the workshop highly beneficial. The programme contributed meaningfully to capacity building in geospatial science and its contemporary applications.

Workshop Photographs (Geotagged)

