

**Mode of conduction:** Offline only

**Learning:** 36 hours of learning including hands-on and field survey

**Tools and Data:** ArcGIS, QGIS, SNAP, Machine Learning tools with Python; Landsat-8/9, Sentinel-2 and Cartosat-2A data for Case Study of urban planning, flood analysis and crop monitoring

**Take Home:** Hands-on experience with Certificate of expertise

**Accommodation:** Available at IIITA guest house/hostels on sharing basis as per the guest house/hostel charges

**No. of seats:** 30 (Max.)

**Registration Fees:** ₹ 5900 (₹ 5000 + 18% GST)

**Registration Deadline:** 20<sup>th</sup> June 2026

**Registration Link:**

<https://apply.iiita.ac.in/event/register/WSIACA/>

## Contact

Dr. Triloki Pant

Associate Professor,

Department of Information Technology,  
Indian Institute of Information Technology  
Allahabad, Prayagraj (U.P.) 211015

☎ and 📞 09643504106

✉ tpant@iiita.ac.in

## About IIITA

The Indian Institute of Information Technology Allahabad (IIIT-A) was established in 1999, as a center of excellence in Information Technology (IT) and allied areas. The institute was conferred the "Deemed University" status by the Government of India in the year 2000. It was declared as an "Institute of National Importance" by the Act of the Parliament, Govt. of India in 2014. The Institute has been conceived with the objective of developing professional expertise and skilled manpower in IT and areas of allied research. As an apex institute in the area of IT, IIIT-A has been contributing towards strengthening the indigenous capability necessary for exploiting profitably and harnessing multi-dimensional facets of IT and allied areas at all levels, and attaining expertise to enable the country to emerge as a leading player in the global arena.

The campus is envisaged to be a fully residential one, with all its faculty, staff and students housed in different pockets. All academic and residential areas are connected to the Institute network.

## Target Audience

**Research scholars, Research associates, Teaching associates and UG/PG students of Engineering/IT Institutions and Universities**

# 3<sup>rd</sup> 7-Day Workshop on Satellite Image Analysis for Contemporary Applications

29<sup>th</sup> June - 5<sup>th</sup> July 2026



in

Department of Information Technology  
Indian Institute of Information Technology-  
Allahabad (IIITA), Prayagraj (U.P.) 211015

## Collaborator

Tech Weave Labs. Noida (U.P.)



## Venue

Advanced Image and Data Science Lab.  
(Room No. 5423, CC-III)

## Coordinator

Dr. Triloki Pant  
Associate Professor  
Department of IT, IIITA Prayagraj

## About the Workshop

Satellite Image Processing is a prominent field of research and development which has become a keen interest of researchers in past few decades. There are various applications where satellite imaging is the only tool to produce the effective results, since a large geographical area can be monitored with the help of satellite imaging easily, e.g., mapping of land cover, deforestation maps, growth of urban area, flood mapping etc.

India has a vast history of satellite missions which were successfully operated in past and continued with more number of satellites every year. It shows the strength of our country in satellite missions and thus satellite imaging system which is as rich as of any other country. Accordingly, a variety of satellite data is now available in the country for the research purpose. The digital image processing and analysis techniques applied to the satellite images produce very useful information which can be utilized for various land cover applications.

The proposed program is for the beginners to learn the basics of satellite image processing and analysis tools in an effective way by providing the exposure to various image analysis tools (**Live Exercise/Hands-on**) and to discuss contemporary problems for future research.

## Topics to be covered

- 1. Introductory Remote Sensing**
  - a. Remote Sensing of Earth Surface
  - b. Land Use and Land Cover Classes
  - c. Ground Data Collection and Sampling
- 2. Types of Satellite Imagery and Sensors**
  - a. Electromagnetic Spectrum for Imaging
  - b. Optical Imaging
  - c. Infrared Imaging
  - d. Microwave Imaging
- 3. Elements of Digital Image Processing**
  - a. Fundamentals of Digital Images
  - b. Image Enhancement Techniques
  - c. Multiband Image Processing
  - d. Feature Detection and Extraction
- 4. Satellite Image Analysis: using GIS Tools**
  - a. Basics of ArcGIS, QGIS, SNAP, Machine Learning tools for Image Processing
  - b. Image Enhancement Tools
- 5. Machine Learning: Image Classification**
  - a. Supervised Classification
  - b. Unsupervised Classification
  - c. Hybrid Approaches
- 6. Change Analysis Techniques**
  - a. Detection of Change in Multi-temporal Images
  - b. Change Detection Algorithms
- 7. Contemporary Applications of Satellite Image Analysis using Machine Learning**
  - a. Urban Growth Analysis
  - b. Flood Mapping and Analysis
  - c. Mapping of Agricultural Area/Crops
  - d. GIS Based Applications

## Objectives

- To provide an exposure of GIS tools to naïve users
- To teach the satellite image processing and machine learning tools to beginners
- To provide hands-on experience of satellite image analysis tools
- To discuss research ideas and topics in satellite image processing applications

## Methodology

The program will be conducted in form of **lectures followed by hands-on**. Each session will have a dedicated section for discussion. One exclusive session will be devoted for discussion of the problems raised by the research scholars followed by proposed solution by the experts.

## Distinguished Speakers

Experienced faculty from IITA and other renowned institutes including

- Dr. Kamal Pandey (IIRS-ISRO Dehradun)
- Dr. Kailash Gaira (NIHE, Sikkim)
- Dr. Sudhir Kumar Singh (Allahabad Uni.)
- Dr. Manoj Kumar (BBAU Lucknow)
- Dr. Sonam Agrawal (MNNIT Allahabad)
- Dr. Rishi Prakash (GEU Dehradun)
- Dr. Vikash Kumar Mishra (Chandigarh Uni.)
- Dr. Ankush Agarwal (IIIT Vadodara)
- Dr. Swarnima Singh (DDUGU Gorakhpur)
- Dr. Pramod Kumar Soni (Manipal Uni.)
- ESRI/GACI Expert(s)
- Tech Weave Labs (Noida) Expert(s)
- IITA Faculty Members