Indian Institute of Remote Sensing
Indian Space Research organisation
Dehradun, INDIA

Specialised Course for Officials from Nigeria

on

ADVANCES IN SATELLITE IMAGE ANALYSIS AND SAR DATA PROCESSING

January 6 -17, 2025

Course Plan:

Time-frame	Course contents
Week 1	**Lectures, Hand-on exercises :** Image processing and AI for information Extraction
Week 2	**Lectures, Hand-on exercises**: SAR data processing
1 day (included in above time frame)	Field visit

Course Contents (*Tentative*):

A. **Lectures**
   1. Overview of Remote Sensing technology & Digital Image Processing
   2. Image Pre-processing & Enhancement Techniques
   3. Pixel Based Information Extraction
   4. Object Based Information extraction
   5. Introduction to AI and its applications on EO data
   6. Introduction to Machine Learning & and its applications on EO data
   7. Concept of Deep learning & algorithms for Image segmentation & Object Detection
   8. Overview of SAR Remote Sensing
   9. Methods of SAR Data Processing
   10. Concepts of SAR Interferometry
   11. Concepts of SAR Polarimetry
   12. Target Detection and Recognition

B. **Practical/Hand-on/Demonstrations:**
   1. Familiarization with RS data and image interpretation (optical/microwave)
   2. Hands-on Exercise on Image Pre-processing Enhancement Techniques
   3. Hands on exercise on pixel based image classification methods
   4. Familiarization with Google Earth Engine
   5. Demo on Machine learning/ANN approaches for EO data classification
   6. Hands-on Exercise on SAR Radiometric & Geometric Corrections
   7. Hands-on Exercise on SAR Interferometry
   8. Hands-on Exercise on SAR Polarimetry

C. **Short case study/assignment**