

IIRS Outreach Programme

The IIRS outreach programme, which started in 2007 with 12 universities/ institutions has now grown substantially. Currently, 3200+ universities / institutions spread across India. The beneficiaries of the programme may include:

- Central/State/Private Universities & Academic Institutions
- Central & State Government Departments
- Forest Resource Professionals
- State Forest Departments/Forest Training Academies
- Research Institutes
- Geospatial Industries
- NGOs

Feedback Mechanism

The participants can submit their feedback through online portal. Feedbacks are critically analyzed and implemented in next courses. For one to one feedback the participants and participating organizations are invited to attend annual IIRS User Interactive Meet (IUIM) at IIRS Dehradun.



Feedback session during IIRS User Interaction Meet (IUIM)-2020

Awards of Appreciation

IIRS has received national awards for excellence in training for outreach and e-learning programme during 1st National Symposium on Excellence in Training conducted during April 11-12, 2015 in New Delhi by Department of Personnel & Training (DoPT), Govt. of India in collaboration with United Nations Development Programme (UNDP).



About IIRS

Indian Institute of Remote Sensing (IIRS) under Indian Space Research Organisation (ISRO), Department of Space, Govt. of India is a premier Training and Educational Institute set up for developing trained professionals in the field of Remote Sensing, Geoinformatics and GNSS Technology for Natural Resources, Environmental and Disaster Management. Formerly known as Indian Photo-interpretation Institute (IPI), founded in 1966, the Institute boasts to be the first of its kind in entire South-East Asia. While nurturing its primary endeavour to build capacity among the user community by training mid-career professionals, the Institute has enhanced its capability and evolved many training and education programmes that are tuned to meet the requirements of various target groups, ranging from fresh graduates to policy makers including academia.

IIRS also conducts e-learning programme on Remote Sensing and Geoinformation Science (<https://elearning.iirs.gov.in>).

Contact Details

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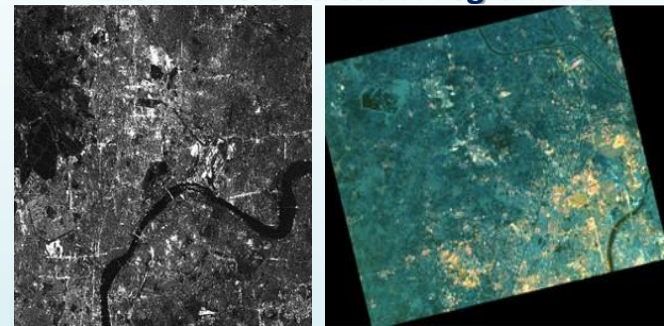
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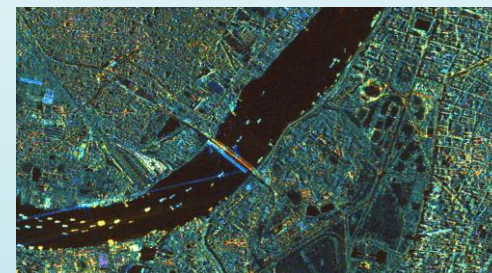
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115th IIRS Outreach Programme



EOS-4 SLC Image

m-delta Decomposition ,Ahmedabad



m-delta Decomposition ,Kolkata

SAR Data Processing & its Application with Special Emphasis on RISAT-1A/EOS-4

April 10 – April 14, 2023



Indian Institute of Remote Sensing
Indian Space Research Organisation
Department of Space, Govt. of India
Dehradun

www.iirs.gov.in

About the Course

Remote sensing is a technique to observe the various features on the earth's surface using satellites or aircraft. With the advancement of spaceborne sensors, remote sensing has become an effective method for the detection of various features on the earth's surface. Optical Infrared (OIR) remote sensing is mainly used to image the earth's surface using the OIR sensor. However, OIR sensors are limited by the availability of sunlight and interference of the atmospheric conditions such as haze and cloud cover. Therefore, the use of microwave or radar remote sensing is much useful for imaging the earth's surface. Radar imaging through Synthetic Aperture Radar (SAR) systems has expanded the technology of Microwave remote sensing in various applications. To understand the SAR imagery, the physics phenomenon behind the interaction of the electromagnetic wave with the earth's surface features needs to be understood. SAR data processing is also different from optical data processing as it involves many signal processing techniques. The SAR data processing uses the pulse compression techniques, Linear Frequency Modulation (LFM) concepts, Range & Doppler information, and various other SAR parameters. The Range-Doppler algorithm (RDA) is a common technique to focus the SAR data. Since SAR is a ranging instrument, geometric distortions are more prevalent in SAR Image as compare to the optical image. Thus, geometric corrections need to be done using SAR geolocation, geocoding, and orthorectification techniques. SAR geolocation is also very much different from optical sensors as it uses the range and Doppler equations to geolocate the target.

Curriculum

The topic and schedule of each course is as follows

- SAR Remote Sensing Concepts: SAR Geometry , Imaging modes, RISAT-1A/EOS-4 Modes, SAR resolution , Geometric Distortions, SAR Image Properties and interpretation
- SAR Data Processing-I: SAR Data Processing concepts, Pulse Compression technique, Synthetic Aperture Concept , Range Cell Migration (RCM), Range Doppler algorithm.

- SAR Data Processing-II : SAR Geometric and Radiometric Correction Techniques , Geolocation , Geocoding , Speckle Filters ,RISAT-1A SAR Products
- SAR Polarimetry : Basic Concepts of SAR Polarimetry, Polarimetric Decompositions , Hybrid Polarimetry, Quad Polarimetry , RISAT-1A Polarimetric Modes.
- SAR Interferometry : Interferogram generation & Processing , Baseline concepts, Across track and Along track Interferometry configurations

Target Participants

The candidates who want to participate in the course should be a graduate or postgraduate. Technical/ Scientific Staff of Central/ State Government/Faculty/researchers at university/institutions are also eligible to apply for this course. Applications of participants have to be duly sponsored by university/institute and forwarded through coordinators from respective centres.

Prerequisite : Basic Knowledge of Remote Sensing and Digital Image Processing

Course Study Material

Course study materials like lecture slides, video recorded lectures, open source software & handouts of demonstrations, etc. will be made available through IIRS ftp link. Video lectures will also be uploaded on YouTube Channel (<http://www.youtube.com/user/edusat2004>).

Course Fee

The Course is free of cost.

Course Registration

- Course updates and other details will be available on URL- <http://www.iirs.gov.in/Edusat-News/>.
- To participate in this programme the interested organizations/ universities/ departments/ Institutes has to identify a coordinator at their end. The identified coordinator will register online his/her Institute as nodal center in IIRS website.
- All the participants has to register online through registration page by selecting his/her organization as nodal center.

Course Funding & Technical Support

The programme is sponsored by Indian Space Research Organisation, Department of Space, Government of India

Programme Reception

Programme can be received through e-class platform of IIRS-ISRO using internet connectivity. No specific hardware/software required. However, it is recommended good internet connectivity at user end. To run the programme in class room, following hardware will be required:

- Desktop computer with web camera microphone and output speakers or laptop with microphone camera and output speaker.
- Large display screen/projector/TV.

Important links

Courses updates and other details will be available on URL – <https://www.iirs.gov.in/EDUSAT-News>

To participate in this programme the interested organisations/universities/departments/institutes have to identify coordinator at their end. The identified coordinator will register online his/her institute as nodal centre in IIRS website (<https://elearning.iirs.gov.in/edusatregistration/coordinator>)

All the participants have to register online through registration page by selecting his/her organization as nodal centre. <https://elearning.iirs.gov.in/edusatregistration/student>

Award of Certificate

Working Professionals and Students: Based on 70% attendance.