SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, Tirupati - 517102

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

71st IIRS Outreach Programme
on
"Advances in SAR Polarimetry and Interferometry"

By Dr. Shashi Kumar, Indian Institute of Remote Sensing, Dehradun

14 – 18 December, *2020*

The Department of Electronics and Communication Engineering has organized a 5-Day Outreach Programme conducted by Indian Institute of Remote Sensing, Dehradun during 14 – 18 December, 2020. The target audience are the faculty and students of various disciplines of Sree Vidyanikethan Educational Trust, Tirupati.

The advancement of earth observation has opened new avenues of research in the field of earth sciences. With the technological advancements in geo-information sciences, remote sensing has become an effective method for detection and investigation of various factors. The visible and infra-red regions are known as optical regions, and the microwave region(1mm-1m) is considered as non-optical region. Systems operating in optical region are being used for several decades and therefore, are more advanced and widely employed. However, their use is limited by availability of sunlight and interference of the atmospheric conditions such as haze and cloud cover especially in the tropical regions. Therefore, the use of microwave or radar remote sensing is preferred in such areas. Radar imaging through Synthetic Aperture Radar(SAR) systems has revolutionized and expanded the technology of Microwave remote sensing especially in thematic applications using different techniques like SAR Polarimetry(PolSAR), SAR Interferometry (InSAR), Persistent Scatterer Interferometric Synthetic Aperture Radar (PSInSAR) and Polarimetric SAR Interferometry(PolInSAR). SAR systems in general helps in understanding glacier and ice movement to give better understanding on long term variation in climate, developing highly accurate and detailed elevation maps, flood and oil spill monitoring, land use and land cover change, soil moisture and forest biomass estimation, assessing the health of crops and forests and even in urban planning and development. The course structure is spread into 4 broad topics of teaching on:

- Polarimetric SAR (PolSAR) Remote Sensing
- PolSAR Data Processing
- Interferometry Synthetic Aperture Radar(InSAR)
- Advances in PolSAR and InSAR Remote Sensing

Following topics will be covered in this course

- Basic concept of Polarimetric SAR Remote Sensing
- Basics of SAR Interferometry, Data Processing and Applications
- Polarimetric Processing of SAR data
- Challenges in Polarimetric Decomposition Modelling based scattering retrieval of PolSAR data
- Emerging Techniques and Applications of Synthetic Aperture Radar(SAR)

Finally, on 18.12.2020, a panel discussion with all the mentors is conducted for interaction with the participants. Three participants have attended this programme.

Dr. V. V. Satyanarayana Tallapragada, Associate Professor has coordinated this event under the guidance of Dr. N. Gireesh, Professor and Head, Department of Electronics and Communication Engineering.

Convener

Dr. V. V. Satyanarayana T

71- IIRS Outreach Programme on Advances in SAR-Polarimetry & Interferometry

View Student | Attendance | Attendance Status | Study Material | Download Certificates

Attendance Record For Course On Geospatial Technology For Disaster Risk Reduction-One Day Online Workshop

Show 10 entries Search:

Registration Number	Name	Total Sessions	No. of sessions attended	%ge of Attendance	Elligibility for Examination/Certificate
2020710569937	MR. VENKATANARESH M	5	4	80.00	Yes
2020710573297	MR. SHEIK ASIF	5	5	100.00	Yes
2020710573769	MS. SUCHITRA REDDY AMBATI	5	4	80.00	Yes

Showing 1 to 3 of 3 entries

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71st IIRS Outreach Programme on

"Advances in SAR-Polarimetry and Interferometry"

December 14-18, 2020

Date & Time (hrs)	Days	Lecture Description	Faculty
14-12-2020 1530-1600	Monday	Overview of the Course	
14-12-2020 1600-1730	Monday	Emerging Techniques and Applications of PolSAR and InSAR Remote Sensing	Dr. Shashi Kumar
15-12-2020 1600-1730	Tuesday	Basic Concept of Polarimetric SAR Remote Sensing	Dr. Shashi Kumar
16-12-2020 1600-1730	Wednesday	Hands-on/ practical exercise on PolSAR data Processing	Dr. Shashi Kumar
17-12-2020 1600-1730	Thursday	Basics of SAR Interferometry, Data Processing and Applications	Dr. Shashi Kumar
18-12-2020 1600-1730	Friday	Challenges in Polarimetric Decomposition Modelling based scattering retrieval of PolSAR data	Dr. Shashi Kumar

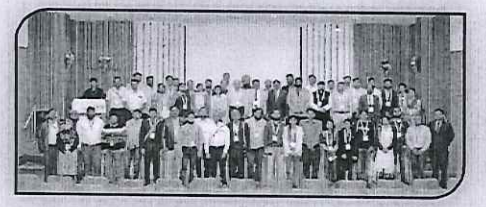
IIRS Outreach Programme

The IIRS outreach programme, which was started in 2007 with 12 universities/ institutions has now grown substantially to 2500+ network institutes. 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

IIRS has conducted eleven workshops in 2007, 2009, 2010, 2013, 2014, 2015, 2016.2017,2018,2019 and 2020 to take feedback from participating institutions to improve the quality of future courses.



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

Awards

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 (*http://elearning.iirs.gov.in*).

Contact Details

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IIRS DLP Team

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IIRS Outreach Programme
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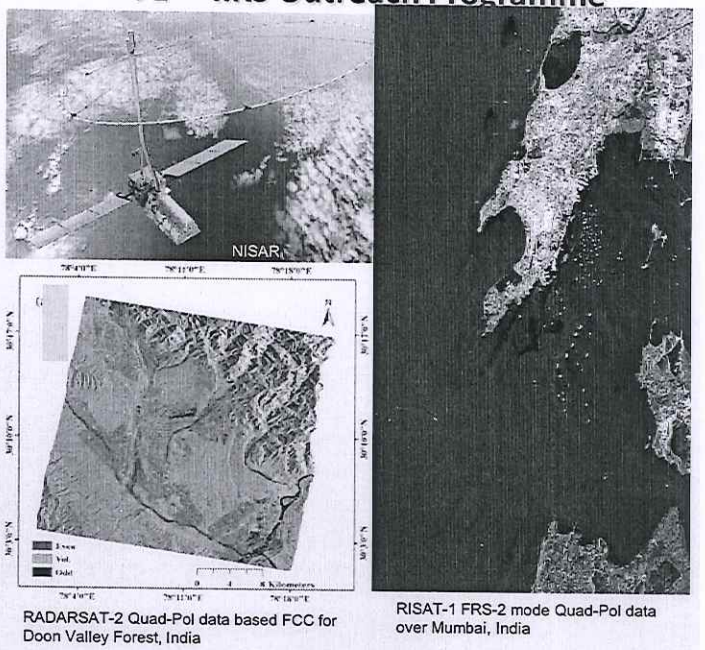
Email: *dlp@iirs.gov.in*

71st IIRS Outreach Programme



RADARSAT-2 Quad-Pol data based FCC for Doon Valley Forest, India

RISAT-1 FRS-2 mode Quad-Pol data over Mumbai, India

Advances in SAR-Polarimetry and Interferometry

December 14- 18, 2020

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Organised by

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

www.iirs.gov.in

About the Course

The advancement of earth observation has opened new avenues of research in the field of earth sciences. With the technological advancements in geo-information sciences, remote sensing has become an effective method for detection and investigation of various factors. The visible and infra-red regions are known as optical regions, and the microwave region (1mm - 1m) is considered as non-optical region. Systems operating in optical region are being used for several decades and therefore, are more advanced and widely employed. However, their use is limited by availability of sunlight and interference of the atmospheric conditions such as haze and cloud cover especially in the tropical regions. Therefore, the use of microwave or radar remote sensing is preferred in such areas. Radar imaging through Synthetic Aperture Radar (SAR) systems has revolutionized and expanded the technology of Microwave remote sensing especially in thematic applications using different techniques like SAR Polarimetry (PolSAR), SAR Interferometry (InSAR), Persistent Scatterer Interferometric Synthetic Aperture Radar (PSInSAR) and Polarimetric SAR Interferometry (PolInSAR). SAR systems in general helps in understanding glacier and ice movement to give better understanding on long term variation in climate, developing highly accurate and detailed elevation maps, flood and oil spill monitoring, land use and land cover change, soil moisture and forest biomass estimation, assessing the health of crops and forests and even in urban planning and development.

Curriculum

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Target Participants

The candidates who want to participate in the course should be a student of final year undergraduate course or postgraduate course (any year).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. Users receiving programmes under CEC-UGC/ CIET networks can also participate. Institutions on high speed National Knowledge Network (NKN).

Course Study Material

Course study materials like lecture slides, video recorded lectures, open source software & handouts of demonstrations, etc. will be made available through e-class. Video lectures will also be uploaded on e-class (https://www.eclass.iirs.gov.in/login).

Course Fee

There is no course fee for attending this programme.

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 have 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

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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 and 40% in the online examination

There are limited number of seats.
Registration will be done on first come first serve basis