

ONLINE SHORT COURSE
ON
“SAR DATA PROCESSING
& ITS APPLICATIONS”

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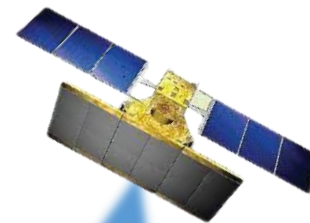
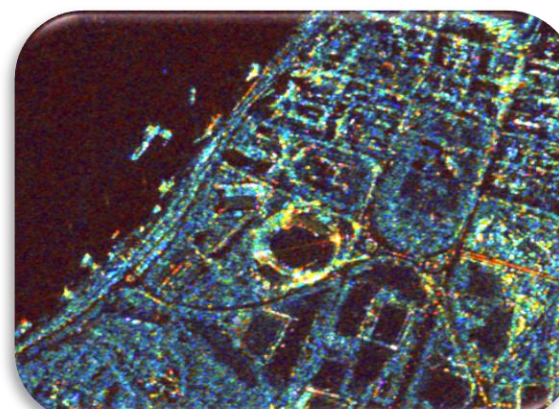
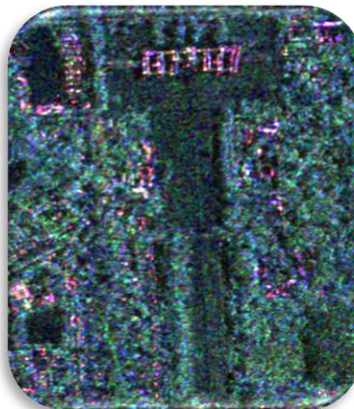


**Centre for Space Science and Technology Education
In Asia and the Pacific (CSSTEAP)**
(Affiliated to the United Nations)
IIRS Campus, 4, Kalidas Road, Dehradun, India
[CSSTEAP \(cssteapun.org\)](http://CSSTEAP (cssteapun.org))



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Through: Virtual Platform
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INTRODUCTION

Remote sensing is a technique to observe the various features on the earth's surface using satellites or aircraft. With the advancement of space borne 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.

ABOUT CSSTEAP AND IIRS

CSSTEAP was established in India in November 1995 with its headquarters in Dehradun and over the past 28 years, the center has emerged as a Centre of Excellence in capacity building in the field of space science and technology applications. The 1st campus of the Centre was established at Dehradun, India and is hosted by Indian Institute of Remote Sensing (IIRS).

CSSTEAP has been imparting training and educational programmes related to RS&GIS, Satellite Communication, Satellite Meteorology, Space Science, Global Navigation Satellite Systems, and Small Satellite Mission, helping participants in developing research skills through its Master Degree, Post Graduate and Certificate programmes.

IIRS (established in 1966), a constituent unit of Indian Space Research Organization (ISRO), is a key player for training and capacity building in geospatial technology and its applications through training, education and research in South east Asia. The training, education and capacity building programmes of the Institute are designed to meet the requirements of professionals at working levels, fresh graduates, researchers, academia, and decision makers

OBJECTIVE OF THE COURSE

The overall objective of this one week training programme is to generate awareness among users / researchers / professionals / decision-makers / academicians on SAR data Processing and its various applications. The participants will be familiarized with basic concepts of SAR remote sensing ,SAR data processing techniques , geometrical corrections of SAR data and its applications.

COURSE CONTENTS

Following topics will be covered in this course

- SAR Remote Sensing Concepts: Basics of SAR remote sensing , Modes of SAR data acquisition, SAR resolution , Speckle , Geometric distortions.
- SAR Data Processing : SAR Raw Data Processing , Geolocation , Geocoding and Orthorectification
- SAR Data Processing Demo
- SAR Polarimetry: Basic concepts of SAR Polarimetry , Polarimetric Decompositions.
- SAR Interferometry : Interferogram Formation ,Phase unwrapping , DEM generation through InSAR

ELIGIBILITY AND HOW TO APPLY

Master's Degree in science or Bachelor's degree in engineering or equivalent qualification relevant to the course objectives with at least 03 years of experience in teaching/research or professional experience in the field of geospatial technology, computer science, geography, mathematics, software development and related fields.

For candidates with higher qualifications, the minimum experience may be relaxed. Basic knowledge in mathematics and / or statistics is essential. The course will be conducted in English language, the candidate should have proficiency in English language.

Applicants are requested to register online by opening the admissions portal at www.cssteapun.org or <https://admissions.cssteapun.org/login>. They are advised to read each and every instruction before applying online https://admissions.cssteapun.org/uploads/cssteap_online_short_course.pdf .The application should be duly forwarded by the Head of the applicant's organization for consideration. There is no course fee for applicants applying through proper channel. Link for lectures will be shared with selected applicants in due course. Applicants are advised to check the website/portal www.cssteapun.org regularly for further updates/information

Announcement of course: Oct 01, 2023

Last date for receipt of application: Nov 01, 2023.

COURSE CONTACT DETAIL

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