



Advancement of Signal Processing in Earth Observation

Overview

In the era of digital earth, role of earth observation which includes monitoring of land surface and beneath, water management and its quality, atmospheric condition monitoring with emphasis to human health, plant and animals is a key issue. Various sensor data like space borne, air borne or ground data are available but there is a need of investigation and development of advanced algorithm by which these data can be used more effectively for improvement of information retrieval related to Earth.

In recent years, these earth related information get interestingly improved by effectively using of signal and image processing techniques in one hand and in another hand development of techniques like pattern recognition, artificial intelligence, data fusion, computer vision, etc that gives good opportunity to retrieve various information more precisely and accurately. It is always challenging to calibrate and fuse different data sources to give accurate information. Earth observation and its monitoring is great interest of industries, various research organizations as well as government organizations where it is quite helpful for making policies, resource management, planning etc. Therefore, the need for advanced information extraction techniques is quite evident.

So, this course will highlight various aspects of advanced signal and image processing techniques and algorithm on earth observations which will be quite useful in contributing digital earth.

Objective:

The basic objectives of the course are as following

- To impart knowledge and advancement of signal processing techniques and its need for precise and accurate observation of Earth from different sensor data
- Providing hand on experience of signal processing tools development which will help to provide the solution as per the requirement of the end-users.
- To provide understanding for system development with incorporation of signal and image processing by which participants may be able to develop various system for information retrieval with different sensor data.
- To enrich the participants for better understanding of signal processing techniques with special emphasis on earth observation.

Course Information	Duration: Dec 5-Dec 9, 2016
Modules	<p>Module 1: Fundamentals of Fourier Theory Module 2: Edge detection Module 3: Multiscale approaches Module 4: Multi Fractal Formalism and Earth Observation application Module 5: Earth Observation Application</p> <p>Number of participants for the course will be limited to fifty.</p>
You Should Attend If...	<ul style="list-style-type: none"> • Students at all levels with interest in advancement of signal processing and its application especially for Earth observation. • Faculty from academic institutions with such interests. • Researchers from industries and research centers with such interests.
Fees	<p>The participation fees for attending the course is as follows:</p> <ul style="list-style-type: none"> • Participants from abroad: US \$500 • Industry/ Research Organizations: Rs. 10000.00 • Academic Institutions (Faculty): Rs. 6000.00 • Academic Institutions (Students): Rs. 2500.00 • Academic Institutions (SC/ST Students) : Rs. 1500.00 <p>➤ Students have to submit a letter from their institute as proof of full time student enrollment. SC/ST students will have to submit a valid Caste/Tribe Certificate.</p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. Fee does not include accommodation and food. On request basis, participants may be provided with accommodation on payment basis.</p> <p>Note:</p> <p>1.The registration fee should be sent in advance through bank draft drawn in favor of "Dean SRIC, IIT Roorkee" and payable at Roorkee latest by Nov. 28, 2016.</p> <p>2. The Complete form along with payment may please be sent to: Prof. Dharmendra Singh, Department of Electronics and Communication Engineering, IIT Roorkee, Roorkee-247667, Uttarakhand</p>

The Faculty



Dr.H. Yahia is the head of INRIA research team GEOSTAT (Geometry and statistics in acquisition data). He is specialized in non-linear signal processing and the analysis of complex signals and systems using statistical physics. Dr. H. Yahia has led pioneering research in the determination of parameters associated to universality classes in acquired phenomena, and in the determination of local transitions in complex natural signals, notably turbulent signals in Earth Observation and Universe sciences (new methods for adaptive optics). Dr. H. Yahia is also leading a project in biophysical signal analysis (heartbeat signals) to study the limits of classical reaction-diffusion models of the heart system. Dr H. Yahia received the Doctorat de 3eme cycle from University Paris 11 (Orsay) and the HDR (Habilitation à Diriger des Recherches) from University Paris 13. Dr H. Yahia has also made substantial contributions in Computer Graphics and Image Processing. He is also involved in many contract with the French spatial agency CNES and the European Spatial Agency (ESA). Dr H. Yahia is the author or co-author of about 90 publications in international peer-reviewed journal and conferences including top-ranked conferences such as IEEE journals, ACM SIGGRAPH, CVPR and ECCV.



Dharmendra Singh received his Ph. D degree in Electronics Engineering from Indian Institute of Technology (Banaras Hindu University) Varanasi, Varanasi, U.P., India. He received various fellowships and awards by the national and international bodies mainly Monbusho Fellowship, Japan, UCAR Fellowship, USA, MERIT Fellowship, European Union, DAAD Fellowship, Germany, TWAS Fellowship, China, IFCAM Fellowship, France, TWAS Fellowship, Brazil and many others. He worked as Visiting Scientist/Post doc Fellow at Information Engineering Department, Niigata University, Japan, German Aerospace Center, Germany, Institute for National Research In Informatics and Automatique, France, Institute of Remote Sensing Application, Beijing, China, Karlsruhe University, Germany, UPC, Barcelona, Spain and visited several other laboratories in other countries. Currently he is working as Professor in Electronics and Communication Engineering Department, Indian Institute of Technology Roorkee, India. He is also the Coordinator of RailTel-IIT Roorkee Center of Excellence in Telecommunication. He has guided 17 Ph.D students and 11 are pursuing their Ph.d and guided more than 60 M. Tech students. He has published more than 250 research papers in reputed international/national journals and conferences.

Course Coordinator

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<http://www.gian.iitkgp.ac.in/GREGN>

Indian Institute of Technology Roorkee

Registration Form

Advancement of Signal Processing in Earth Observation

(MHRD Scheme on Global Initiative on Academic Network(GIAN))

December 5 - 9, 2016

- Name
- Designation
- Affiliation
- Address for Correspondence
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- Email:
- Phone No:
- Accommodation required: Yes / No
- Type: Hotel
- Cheque/DD No.
- Dated for Rs.

Date

Signature of the participant

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