Remote Sensing Science and Sensors for Agricultural Applications

(Feb 20-24, 2018)

Venue: Indian Institute of Technology Roorkee, Roorkee-247667, Uttarakhand, India

.....

Overview

In the era of smart agriculture, remote sensing has an integral role in monitoring of agricultural field, crop health, water management and its quality, and atmospheric conditions with emphasis to yield. New remote sensing datasets at various spatial and temporal scales from satellite and airborne platforms, and significant advances in computational and data fusion technologies have now enabled unprecedented applications. Of particular importance are the agricultural applications, given the urgency. For example, a recent report by the UN Food and Agricultural Organization (FAO) projects that an increase in world population to 9.15 billion by 2050, which may require the current food production to increase by 60%. This drastic increase in production exceeds production increases observed over the last century and is likely to have significant implications for global food security. Many efforts are underway to increase overall production by increasing efficiency in production such as high intensity agriculture, efficient water use, and high yield varieties.

Remote sensing observations at different wavelengths are highly sensitive to dynamic soil and crop conditions in agricultural landscape. These are being increasingly used for crop classification, in-season soil water and yield predictions that are necessary for efficient agricultural management. Effective utilization requires development of advanced data fusion, spatio-temporal scaling, and data assimilation algorithms. Even though novel research efforts are underway to develop and implement such methodologies, a significant gap exists in

multidisciplinary training of future workforce in India. Such training is critical to continue meaningful contributions in agricultural management.

The proposed course aims to address this gap by bringing together internationally renowned researchers and teachers in remote sensing and computational technologies, with particular applicability for agriculture.

Objective:

The main objective of the course is to develop an understanding of remote sensing science and sensors in visible; infrared; and microwave regions of the EM spectrum; and various scaling and data fusion techniques used in agricultural applications. The course is divided into three parts. The first part includes science basis of remote sensing and sensors (2 modules). The second part of the course involves spatio-temporal scaling techniques for data fusion (2 modules); and the third part includes a data assimilation for agricultural applications (1 module).

Course Information	**Duration: Feb 20-Feb 24, 2018**
Modules	Module 1: **Radiative transfer in Optical, Infrared, and Microwave** Module 2: **Satellite, airborne, and ground-based Active and Passive Sensors in Agriculture** Module 3: **Data Fusion in Agriculture** Module 4: **Data Assimilation** Module 5: **Agriculture Management Application** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	• Engineers, Executives and researchers from companies, service and government organizations including R&D laboratories. • Student students at all levels (BTech/MSc/MTech/PhD) • Faculty from reputed academic institutions and technical institutions.
Fees	The participation fees for attending the course is as follows: • Participants from abroad: US $500 • Industry/ Research Organizations: Rs. 12000.00 • Academic Institutions (Faculty): Rs. 7000.00 • Academic Institutions (Students): Rs. 3000.00 • Academic Institutions (SC/ST Students) : Rs. 2000.00 ➢ 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. 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.** **Note:** **Accommodation:** **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 Jan. 31, 2018.** **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,** **e-mail: dharmfec@iitr.ac.in**

The Faculty

Jasmeet Judge received the Ph.D. degree in Electrical Engineering and Atmospheric, Oceanic, and Space Sciences from the University of Michigan, Ann Arbor, MI, USA, in 1999. Currently, she is the Director of the Center for Remote Sensing. Dr. Judge specializes in microwave remote sensing, with applications to agricultural hydrology. Her research interests/expertise include microwave remote sensing for dynamic vegetation; spatial and temporal scaling of remotely sensed observations in heterogenous landscapes; data assimilation; modeling of electromagnetic, energy, and moisture interactions at the land surface; and modelling of crop growth development. She has about 20 years of experience in leading multidisciplinary field campaigns and integrating remote sensing observations with hydrology and crop models. She has published over 50 research articles in professional journals and conferences, and given invited presentations nationally and internationally.

She is the Chair of the U.S. National Academies Standing Committee on Radio Frequencies that advises the US Federal Communication Commission on frequency allocations for scientific uses of the radio spectrum. She is also a member of the Frequency Allocations in Remote Sensing Technical Committee in the IEEE-GRSS. She also serves the American Geophysical Union as the past-chair of the Remote Sensing Technical Committee in the Hydrology Section.

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 22 Ph.D students and 12 are pursuing their Ph.d and guided more than 65 M. Tech students. He has published more than 300 research papers in reputed international/national journals and conferences.

Course Coordinator

Prof. Dharmendra Singh
Phone:(+91)-(0)1332-285695
E-mail: dharmfec@iitr.ac.in

.....

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

Indian Institute of Technology Roorkee

Registration Form

Remote Sensing Science and Sensors for Agricultural Applications

(Feb 20-24, 2018)

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

- Name …….……...…….
- Designation ……...……...
- Affiliation ……...……..
- Address for Correspondence ……..…..….
  ……...…….……
- Email: ……...……...
- Phone No: ……..
- Accommodation required: **Yes / No**
- Type: Hotel/Hostel/Guest House (accommodation shared basis may be available @Rs. 500/ per day)
- Cheque/DD No. …….……...
- Dated ……..….. for Rs. ……

Date Signature of the participant

Note:

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 Jan. 31, 2018.

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, India, Ph.No.: (+91)- (0)1332-285695, e-mail: dharmfec@iitr.ac.in