Short Term Course on Sampling theory and its Applications: Signal, Image processing and Data Science

Department of Mathematics, IIT Indore

January 24-29, 2022

Webpage: http://events.iiti.ac.in/sipds/

About Department

The Department of Mathematics, IIT Indore started functioning in July 2009, introduced its Ph.D. programme in 2010 and M.Sc. programme in 2015. The department is dedicated to research and teaching and encouraging collaborative research with other Science and Engineering Departments of the Institute. The present faculty members of the department are well equipped to conduct research programmes in both Pure and Applied Mathematics. Faculty members undertake research projects sponsored by various organizations including Science and Engineering Research Board, Department of Science and Technology, Council of Scientific & Industrial Research, National Board for Higher Mathematics, MHRD Scheme for Promotion of Academic and Research Collaboration (SPARC). Please visit http://math.iiti.ac.in for more details.

Overview

One of the main interests of current research lies in discretizing a continuous signal/image/function due to real-life problems, like, signal detection, image representation, object recognition, noise reduction, sparse approximation, wireless communications, filter banks, etc. Sampling is one of the processes for converting a continuous signal/image into a discrete sequence. H. Nyquist started such theory in 1928, while Claude E. Shannon in 1948 established powerful results in signal analysis, known as the **Shannon sampling theorem**. More profound knowledge of Sampling theory is required for different real-life problems that arise in signal/image processing/Data Science. A good understanding of linear algebra enhances working in this direction and developing the skill to obtain methods, algorithms, and software. Many learning theories like a machine and deep learning theory play a crucial role in this direction. The course provides knowledge towards the Sampling theory and real-life applications by using MATLAB and R software. It will surely enhance participants' skills.

Benefit to participants?

It is necessary to bring different topics from the undergraduate/postgraduate curriculum and introduce students and faculty to a developing area in mathematics. Introductory linear algebra and functional analysis is a natural topic of this course. It will help get desired properties of real-life problems relating to signals, image processing, data science, etc. This will allow the participants to become aware of the current frontiers of Sampling theory and the possible further developments. The course will enhance participants' knowledge and raise their fundamentals for their teaching and research purposes.

Important Date

Registration Deadline: January 15, 2022

Course Organized By

- Dr. Niraj Kumar Shukla
  Email: nirajshukla@iiti.ac.in
- Dr. Sk. Safique Ahmad
  Email: safique@iiti.ac.in

Department of Mathematics, IIT Indore

Registration Fees

AICTE Colleges: No fee* (for faculty members)

* The nominations along with the registration forms must be sent to wavelet.iiti@gmail.com.

Non-AICTE Colleges: Rs. 2,000/-per faculty/student/researcher**

For other participants: $ 75 or Rs. 5,000/-per participant**

**Evidence of payment should be emailed (wavelet.iiti@gmail.com) in advance to confirm the participation.

Experts

- Dr. Sk. Safique Ahmad, Department of Mathematics, IIT Indore
- Prof. Ole Christensen, Department of Applied Mathematics and Computer Science, Technical University of Denmark, Denmark
- Dr. Anupam Gumber, Post Doctoral Fellow, University of Vienna, Austria
- Prof. Michiel E. Hochstenbach, Department of Mathematics and Computer Science, TU Eindhoven, Netherlands
- Dr. Munir Ahmad Nayak, Department of Civil Engineering, NIT Srinagar
- Prof. R. Radha, Department of Mathematics, IIT Madras
- Prof. C. S. Seelamantula, Department of Electrical Engineering, IISc Banglore
- Dr. A Antony Selvan, Department of Mathematics and Computing, IIT (ISM) Dhanbad
- Dr. S. Sivananthan, Department of Mathematics, IIT Delhi
- Prof. Ivan Slapnicar, University of Split, Croatia
- Dr. Niraj K. Shukla, Department of Mathematics, IIT Indore
- Talk on National Education Policy 2020

Other Important Information

- MODE OF THE PROGRAM: Completely Online Mode
- For Online Payment: http://www.iiti.ac.in/page/e-payments
- For Registration: https://form.jotform.com/213445452348052
- Participants completing the course successfully will be awarded e-Certificate.
- Google Meet link will be provided to the registered participants by email before the course starts.
- For any query, please write here wavelet.iiti@gmail.com.