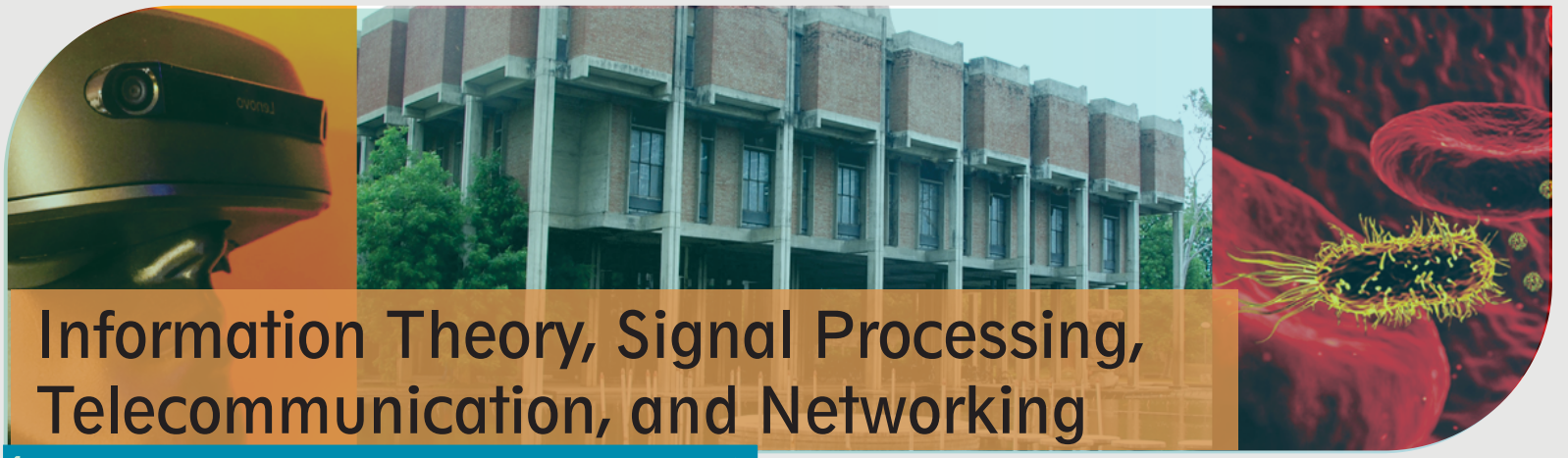
JTG/IEEE ITSoc Summer School 2021

Department of Electrical Engineering

Indian Institute of Technology Kanpur



Information Theory, Signal Processing, Telecommunication, and Networking

June 28 - July 01, 2021

Welcome to the Twelfth Joint Telematics Group (JTG)/IT Society Summer School to be organized by the Department of Electrical Engineering at IIT Kanpur. The school was seeded by the JTG to serve as a platform for distinguished researchers to deliver lectures spanning contemporary research areas in signal processing, telecommunication, networking and information theory, for students, faculty, and researchers from all over India.

Brief Note on JTG: The JTG, comprising of faculty from various IITs and IISc, was formed with the aim of imparting cutting-edge technical knowledge in signal processing, telecommunications, networking, and allied ields to engineers, scientists, faculty and industry personnel from all over India. The JTG organizes the prestigious National Conference on Communication (NCC), held annually across member IITs and IISc.

2021 Padovani Lecturer: Prof. Muriel Médard

Muriel Médard is the Cecil H. Green Professor in the Electrical Engineering and Computer Science (EECS) Department at MIT. She leads the Network Coding and Reliable Communications Group at the Research Laboratory for Electronics at MIT. Her research interests include network coding, information theory, wireless networks, and optical networking.

https://www.rle.mit.edu/people/directory/muriel-medard/

Course 1: Introduction to Molecular Communications

This course will provide a detailed introduction to state-of-the-art molecular communications. Beginning with a demonstration of how molecular communication fits with the standard framework for analyzing communication systems, it will discuss various models for molecular communication, effective communication strategies, and information-theoretic analysis. The course will also include a practical perspective on the experimental validation of these results. The participants will be introduced to two successful, low-cost, tabletop experimental systems used in published research.

Speaker: Prof. Andrew Eckford

Andrew Eckford is an Associate Professor in the Department of Electrical Engineering and Computer Science at York University, Toronto, Ontario. His research interests include the application of information theory to biology, and the design of communication systems using molecular and biological techniques.

http://www.andreweckford.com/

Course 2: Machine Learning in Communications

The course will introduce concepts in statistical learning theory, including hypothesis classes and their complexity, followed by VC dimensions and generalization bounds in terms of VC dimensions, estimation theoretic interpretation of machine learning algorithms. Popular machine learning algorithms will be analyzed as ML and MAP estimators of appropriate generative models. Deep neural networks, an information-theoretic interpretation of neural networks based on the idea of an information bottleneck, and the role of point processes in machine learning will also be described.

Speaker: Prof. Harpreet S. Dhillon

Harpreet S. Dhillon joined Virginia Tech in 2014, where he is currently Associate Professor of Electrical and Computer Engineering and the Elizabeth and James E. Turner Jr. '56 Faculty Fellow. His research interests include communication theory, wireless networks, stochastic geometry, geolocation, and machine learning.

https://www.dhillon.ece.vt.edu/

Summer School 2021 will also include faculty talks in emerging areas in signal processing, communications, and information theory.

Registration Fees

Students and Postdocs
Rs. 100+ 18% GST

Faculties and Govt/Industry Professionals
Rs. 500 + 18% GST

Online School

Due to COVID-19 restrictions, the 12th JTG/IEEE IT Society summer school will be a virtual event for the first time in its history

Contact

For any query send us a mail at jtg2021@iitk.ac.in

or write to us at

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