



Sparse Signal Processing and Random Sampling

11th Dec. 2017 to 15th Dec 2017

Overview:

For the last 70 years, communication signals have been assumed to be low pass and the sampling scheme has been assumed to be uniform. If speech or images were not low pass, antialiased filters would be used to remove high frequency distortions. This has been the basic of all Analog to Digital converters. However, real signals are typically sparse in the frequency domain. In this scenario, uniform sampling is not optimal for sparse signals. Nonuniform (random) sampling is actually appropriate for these types of signals. A significant consequence of this fact is that antialiased filters are not needed and thus there is no need to introduce distortion at the outset. Random sampling could be regarded as a subset of compressed sensing.

Objectives:

- Exposing participants to the fundamentals of sparse signal processing and random sampling.
- Building in confidence and capability amongst the participants in the theory of compressed sensing.
- Using Matlab and Mathcad simulations to get practical experience about the theory

Course	11 th Dec 2017 to 15 th Dec 2017
Host Institute	National Institute of Technology, Rourkela
Maximum Number of Participants	50
You Should Attend If...	<ul style="list-style-type: none"> • you are a Signal Processing/Communication engineer or research scientist interested in development and application of Communication/ Digital Signal Processing. • you are a researcher in the field of Communication/Signal Processing.. • you are a student or faculty from academic institution interested in learning/ take up research in the field of Communication/ Signal Processing.
Fees	<p>The participation fees for taking the course is as follows:</p> <p>Participants from abroad : US \$300 Industry/ Research Organizations: Rs. 6000/- Academic Institutions: Rs. 3000/- Students: Rs. 1500/-</p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges. The participants will be provided with accommodation on payment basis.</p>

The Faculty



Prof. F. Marvasti received his B.S. (Magna Cum Laude), MS and Ph.D. Degrees from Rensselaer Polytechnic Institute in 1970, 1971 and 1973 all in Electrical Engineering and Communication Systems. He is a Professor in Sharif University of Tech since 2000, he was a visiting Professor in University College London (UCL) in 2011-2012, is associated with Iran Telecommunication Research Center, International Affairs since 1999, is Head of Multimedia Group and Head of Institute of IT, was a lecturer in King's College London during 1992-2003, working on Error Concealment (1997-1998) in Lucent Technologies UK, had been Associate Professor, Illinois Institute of Technology during (1987-1991), Consultant in Video Compression in (1991-1992), AT&T Bell Labs., USA., Member of Technical Staff on ATM, 4ESS, 5ESS Switching Systems and Operator Systems (OSPS) (1985-1987). His research area is Non-uniform Sampling in Signal Processing, Telecommunications, Speech, Image and Video Processing.



Prof. Poonam Singh, is Associate Professor in the Department of Electronics and Communication Engineering Department of National Institute of Technology, Rourkela since 2006. Her research interests include Wireless and Mobile Communications, Cognitive Radio, Device-to-Device Communication.

Course Coordinator

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