Sensing and Learning in Distributed Systems Operating under Resource Constraints

The collection and processing of massive amounts of data by modern information systems present numerous challenges in the fields of signal processing and machine learning. We consider settings where the information is collected and/or distributed across a network of resource-constrained devices. In the first part of the talk, we focus on the task of selecting informative observations in a sensor network. By relying on concepts from submodular optimization, we design information gathering methods for linear and quadratic measurement models with provably guaranteed performance. In the second part of the talk, we turn our attention to federated learning systems wherein a central server coordinates learning from data distributed across many clients. Relating the federated learning task to the problem of sampling and remote estimation of a stochastic process leads us to client sampling strategies that significantly improve communication efficiency of the system.

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Date: Friday, April 9, 2021
Time: 1:00 – 2:00 p.m. US Central Time
Zoom Meeting ID: 998 4499 3279
Passcode: 724615
Faculty host: Xiaoning Qian, ECEN

Biography

Dr. Haris Vikalo received the Ph.D. degree from Stanford University in 2003. From 2003 to 2007, he was an Associate Scientist with the California Institute of Technology. Since September 2007, he has been with the Department of Electrical and Computer Engineering, the University of Texas at Austin. His research interests include signal processing, machine learning, communications, and bioinformatics.

You can also click this link to join the seminar https://tamu.zoom.us/j/99844993279?pwd=TkJodWFVRURyMmkwakI4SWZGeVJTQT09

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