Title: **Compressive Link Acquisition in Multiuser Communications**

Speaker:
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Abstract:
In signal processing, one of the fundamental tasks is to sample signals efficiently and extract the information embedded therein. Many signals encountered in practice can be categorized as in a union of subspaces (UoS). For some special cases of such signals, there have been major efforts in bringing down the cost and complexity of the acquisition front-end, including compressed sensing, finite rate of innovation (FRI) sampling or more generally sub-Nyquist sampling. Although many works on compressed sensing have emerged on tackling different estimation/detection problems in communications, few of them have articulated the crux of the problem: how to obtain informative samples from the analog domain and optimize the analog-to-digital (A/D) front-end? Furthermore, there is no clear indication on the practical gains and loss of using such structure in contrast to the state-of-the-art in communication on received signal acquisition. The goal of this talk is to examine in depth a general problem in multiuser communications and address how compressed sensing and modern sampling techniques can be applied in the context of communications with an optimal design. Specifically, we study a sequential compressive link acquisition scheme with an optimized A/D front-end, which incorporates the insights from compressed sensing that exploits the underlying sparsity of the signals, and from FRI or sub-Nyquist sampling that exploits a minimal amount of samples to reconstruct the analog signals.

Biography of the speaker:

Xiao LI is a currently a Ph.D. student at University of California, Davis. He received his B.Eng. degree with highest honor in Electrical Engineering from Sun Yat-Sen (Zhongshan) University, China in 2007 and his M.Phil. degree in Electrical and Electronic Engineering from The University of Hong Kong in 2009. His main interests lie in the broad area of signal processing, with applications in communications and networks, as well as cyber-physical systems, especially Smart Grid.

Organizer: Dr. Y.C. Wu