

# Research Seminar



## LiSens - A Scalable Architecture for Video Compressive Sensing

Jian Wang | Carnegie Mellon University

Tues. Apr. 14th, 2015 | 12:00-1:00 PM | Hamerschlag Hall D210

**Seminar abstract:** The measurement rate of cameras that take spatially multiplexed measurements by using spatial light modulators (SLM) is often limited by the switching speed of the SLMs. This is especially true for single-pixel cameras where the photodetector operates at a rate that is many orders-of-magnitude greater than the SLM. We study the factors that determine the measurement rate for such spatial multiplexing cameras (SMC) and show that increasing the number of pixels in the device improves the measurement rate, but there is an optimum number of pixels (typically, few thousands) beyond which the measurement rate does not increase. This motivates the design of LiSens, a novel imaging architecture, that replaces the photodetector in the single-pixel camera with a 1D linear array or a line-sensor. We illustrate the optical architecture underlying LiSens, build a prototype, and demonstrate results of a range of indoor and outdoor scenes. LiSens delivers on the promise of SMCs: imaging at a megapixel resolution, at video rate, using an inexpensive low-resolution sensor.

### Seminar Committee

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