**Computational Imaging**

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Computational imaging is the joint design of imaging system hardware and software, optimizing across the entire pipeline from acquisition to reconstruction. Such end-to-end design of image capture and processing has pushed imaging science to unprecedented resolutions and scales through novel use of computation. For example, computational imaging has enabled gigapixel imagers, super-resolution microscopy, 3D imaging and High Dynamic Range (HDR) imaging. Our session will highlight research in this exciting emerging field, with a focus on the core computational problems and hardware designs that can significantly expand imaging capabilities in a wide variety of application areas of interest to academia, industry and defense.

This session will feature three exciting speakers representing geographical diversity across academia and industry. They will describe design of full-stack imaging pipelines - from sensors, electronics and optics to algorithms and applications. First, we have George Vogiatzis from Aston University to talk about recent advances in computer vision algorithms that use machine learning for 3D scene reconstruction. Next, Sylvain Gigan will discuss optical imaging in biological and complex networks. Finally, Michael Lustig from UC Berkeley will describe how to use computational tricks to speed up MRI scans by several orders of magnitude without sacrificing resolution, enabling real-time MRI imaging of dynamic events.