**Distributed Localization for Interconnected Devices: An Iterative Linear Solution**

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IoT interconnects ever more physical devices that are instrumented with embedded electronics, sensors of different modalities, and actuators. To make full use of IoT and expand the range of potential applications, for example, tracking resources deployed in Hospital environments, or to manage deployed assets, it is important to localize them efficiently, not only outdoors, but, and increasingly more relevant, indoors where GPS is not available. To minimize infrastructure, communications, and power needs, these instrumented devices should cooperate with other nearby objects. In this keynote, I will present a distributed (cooperative) solution that solves the essentially nonlinear localization (triangulation) problem by an iterative linear algorithm that asymptotically converges to the correct localization of each and every device. I will discuss the minimal requirements for convergence and extensions of the basic algorithm to account for motion and noise.

Ref.: Khan, Kar, and Moura, IEEE Access 2015, IEEE Trans. Signal Processing, 2010, 2009.

**José M. F. Moura**, [www.ece.cmu.edu/~moura](http://www.ece.cmu.edu/~moura), is the Philip L. and Marsha Dowd University Professor at CMU, with interests in signal processing and data science. He invented (with Alek Kavcic) a patented detector found in at least 60% of the disk drives of all computers sold worldwide in the last 13 years (over 3 billion and counting) – the subject of the recent settlement (February 2016) of $750 Million between CMU and Marvell, the largest settlement ever in the information technologies IP area and 3rd largest overall. He is (2016) IEEE VP for Technical Activities, IEEE Board Director, and was President of the IEEE Signal Processing Society (SPS), and Editor in Chief for the Transactions on SP. Moura received the IEEE SPS *Technical Achievement Award* and *Society Award*. He is Fellow of the IEEE and of AAAS, corresponding member of the Academy of Sciences of Portugal, Fellow of the US National Academy of Innovators, and member of the US National Academy of Engineering.