



Birck Nanotechnology Center



Shreyas Sen is an Assistant Professor in ECE, Purdue University. Dr. Sen received his BE from Jadavpur University followed by Ph.D. from ECE, Georgia Tech in 2011 and has over 5 years of industry research experience in Intel Labs, Qualcomm and Rambus. His current research interests include circuits/systems for IoT, Biomedical and Security. Dr. Sen is a recipient of the NSF CRII Award, AFOSR Young Investigator Award, Google Faculty Research Award, Intel Quality Award for industrywide impact on USB-C type and multiple best-paper awards. He has co-authored 2 book chapters, over 100 journal and conference papers and has 12 patents granted/pending.

Birck Faculty Seminar Professor Shreyas Sen

Thursday, February 15, 2018

12:00pm – 1:00pm

BRK 2001 – Lunch Provided

Secure Human-Centered Network of Intelligent Devices using Human Body Communication and In-Sensor Analytics

Rapid miniaturization has led to the size of unit computing approaching virtually zero. In foreseeable future, Computing will be all around us, in mostly invisible forms, and is expected to lead 50+ billions of IoT (Internet of Things) devices. At the forefront of which will be distributed sensing nodes acting as the eyes and ears of IoT, which needs to be incorporate intelligence to go from data domain to information domain closer to the edge of the network. Tight resource constraints of these devices in terms of form-factor and energy-availability calls for order(s) of magnitude of improvement of energy-efficiency of computing and communication in a sensor node. In this talk we will highlight how a Secure Human-Centered Network of Intelligent Devices can be employed using multiple on-body sensors and a body hub connected to the cloud by efficiently incorporating (1) Staged Inference i.e. distributing the analytics in a hierarchical manner from sensors to hub to cloud and (2) Human Body Communication that uses the conductive properties of the human body to securely interconnect devices in and on the body with >100x better energy-efficiency compared to WBAN.