



**Graduate Seminar (EEL 6936)**  
**Department of Electrical Engineering**  
**[http://ee.eng.usf.edu/Grad\\_Seminar](http://ee.eng.usf.edu/Grad_Seminar)**

**Prof. Ashwin Parthasarathy, Assistant Professor**  
**Electrical Engineering Department**  
**University of South Florida, Tampa, FL**

Friday, September 9, 2016, 2:00 p.m. - 3:00 p.m.  
Center for Urban Transportation Research (CUTR) Room 202

## **Optical Imaging and Monitoring of Cerebral Blood Flow**

### **Abstract**

Optical technologies offer great promise for non-invasive clinical diagnosis & monitoring of diseases such as strokes and cancers. Optics is particularly well suited for the bedside monitoring of tissue physiology; it uses non-ionizing radiation, is non-invasive, is portable, and can provide continuous sensitivity to important endogenous biomarkers of tissue health such as blood flow and oxygen saturation. In this talk, I will introduce Diffuse Correlation Spectroscopy (DCS), a non-invasive optical method to monitor cerebral blood flow (CBF) in the clinic. I will also detail recent instrumentation and algorithmic improvements for *deep tissue* CBF monitoring using DCS, and will describe how DCS technology can be applied for the diagnosis and monitoring of cerebrovascular diseases at the bedside of critically ill patients. Finally, I will briefly discuss the extension of optical methods for camera-based 2-dimensional imaging of cerebral blood flow (CBF), with applications to imaging stroke progression, and intraoperative imaging of CBF during neurosurgery.



### **Biography**

Dr. Ashwin Bharadwaj Parthasarathy is an Assistant Professor of Electrical Engineering at the University of South Florida. He has a doctoral degree in biomedical engineering from The University of Texas at Austin and has completed postdoctoral research at Boston University and University of Pennsylvania. His research integrates optics, physics, engineering, and computation principles to develop novel imaging/monitoring technology for applications that include bedside diagnoses/monitoring of brain injuries, intraoperative imaging, critical care monitoring, and modeling neurophysiology & neuroprotection.