



**Graduate Seminar (EEL 6936)**  
**Department of Electrical Engineering**  
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Friday, October 14, 2016, 2:00 p.m. - 3:00 p.m.

**Center for Urban Transportation Research (CUTR) Room 202**

## **Synchronization and Selective Attention**

### **Abstract**

In this talk, we will look at two aspects of our joint work with Profs. Salvatore D. Morgera and Arthur D. Snider. Under consideration is the neural basis of selective attention, the ability to choose a particular stimulus from a field of possibilities. The first aspect is modeling of neuronal synchronization via ephaptic coupling in specific nontrivial axon geometries. The second aspect is an information theoretic interpretation of time coded ephaptic synchronization. The take home message of this talk is that selective attention can be understood if we focus on two layers - first the physical layer, exemplified by synchrony in ephaptic coupling and next the data layer, exemplified by information flow in ephaptic coupling. We will begin with the biophysics of the action potential and lead up to an information theoretic analysis of synchronization.



### **Biography**

Aman Chawla received a B.S. in Electrical and Computer Engineering from Cornell University, Ithaca, NY in 2004 (Honors, Summa Cum Laude) and an M.S. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology, Cambridge, MA in 2006. He received the Hiram Sibley Prize of Cornell University in 2004 and an honorable mention at the USF Engineering Research Day in 2012. He is presently a doctoral candidate in Electrical Engineering under the supervision of Profs. Salvatore D. Morgera, and Arthur D. Snider. His research interests are at the interface of Electrical Engineering and Neuroscience.