



CoCo Seminar Series Fall 2018

Bayesian Signaling Games and Their Applications to Misinformation Spread over Networks

Dr. Emrah Akyol
**Assistant Professor of Electrical and Computer
Engineering, Binghamton University**

Wednesday November 14, 2018 11:00am-12:00pm
**Engineering Building H-9 (Knoll-MacDonald
Commons / Watson Commons)**



Over thirty years ago, economists Vincent Crawford and Joel Sobel introduced the concepts of strategic information transmission (SIT) and cheap talk in their seminal *Econometrica* paper, as a way of understanding how information is strategically revealed (or not) by agents whose interests are only partially aligned. This theory has had tremendous success in explaining situations ranging from advertising to expert advice sharing, and many extensions of the original SIT model and the broader "principal-agent" class of problems have been extensively studied in the economics literature since. However, despite its superficially obvious connection with communication and information theory, SIT has so far received very little attention from the engineering community.

In this talk, I will present a similar strategic communication paradigm where the better-informed transmitter communicates with a receiver who makes the ultimate decision concerning both agents. While the economists have extensively studied the Nash equilibrium variant of this problem, the more relevant Stackelberg equilibrium, referred as Bayesian Persuasion in the Economics literature, enables the use of communication/information theoretic tools to analyze the engineering problem. I will briefly mention several examples of our recent work on various applications of this theory ranging from the "price of transparency" in machine learning to (mis)-information spreading games over cyber-social networks in the presence of confirmation bias.

Dr. Emrah Akyol received the PhD degree from the University of California at Santa Barbara, in 2011. He is an assistant professor of Electrical and Computer Engineering, Binghamton University. From 2006 to 2007, he held positions at Hewlett-Packard Laboratories and NTT Docomo Laboratories, both in Palo Alto, CA where he worked on topics in image and video compression. From 2013 to 2014, he was a postdoctoral researcher in the Electrical Engineering Department, University of Southern California, and between 2014 and 2017, in the Coordinated Science Laboratory, University of Illinois at Urbana-Champaign. His current research focuses on information processing challenges associated with socio-cyber-physical systems. He is a senior member of the IEEE.

For more information, contact Hiroki Sayama (sayama@binghamton.edu). <http://coco.binghamton.edu/>