UCF | Electrical and Computer Engineering

Spring 2018 Seminar Series

Convergence and Control in Networks of Coordinating and Anti-Coordinating Agents

FRIDAY JANUARY 19, 2018

11:30 AM – HEC 356

In social, economic, neural, robotic, and various other types of networks, the spread of ideas, innovations, and information can be modeled by networks of coordinating agents, who tend to adopt the action or decision taken by the majority of their respective neighbors. On the other hand, congestion, traffic, and dispersion processes can be modeled by networks of anti-coordinating agents, who tend to avoid taking the action of the majority of their neighbors. Some applications involve interactions between both types of agents. In this talk, I will discuss the conditions under which we can expect such networks to converge to an equilibrium state and how to find the set of all equilibrium states. I will also present some techniques for driving coordinating networks toward desired equilibria through the efficient use of incentives or threshold changes, either uniformly applied or targeted to specific nodes in the network.

James Riehl

Washington University, St. Louis

James Riehl received his PhD at the Center for Control, Dynamical Systems, and Computation at the University of California, Santa Barbara, where his research focus was large-scale optimization on graphs with application to cooperative search and path-planning. After several years working on network optimization and modeling at an AT&T research lab in Santa Barbara, he joined the University of Groningen, the Netherlands, as a postdoctoral researcher, where he focused on the analysis and control of networked multi-agent systems and evolutionary games on networks. He currently holds a postdoctoral position in the Brain Dynamics and Control research group at Washington University in Saint Louis.