

## Talk: Self-organized Path Planning for an Unmanned-Vehicle Network

### **Evsen Yanmaz**

Autonomous networks have drawn the interest of several researchers working in different areas. Some important applications for such networks are area surveillance, target detection/tracking, emergency assistance, remote sensing, etc. These applications can be interpreted as coverage or autonomous path-planning problems, which are of main interests in robotics and are, generally, solved using combinations of cellular decomposition and routing. While the constraints and requirements of the system are different than an autonomous robotic network, this problem is also a natural application for wireless sensor networks; e.g., environmental monitoring, health monitoring, liveliness detection in case of natural disasters, and target tracking in hostile situations.

In this talk, we focus on path planning methods for a UAV network and we compare and contrast deterministic and probabilistic path planning strategies for an autonomous unmanned aerial vehicle (UAV) network, where the objective is to explore a given area with obstacles and provide an overview image. Results illustrate the benefits and drawbacks of different planning strategies and provide insight into which strategy should be taken given the constraints of the application of interest as well as the available information and degree of cooperation.

### **Bio:**

Evsen Yanmaz received the B.S. degree in electrical and electronics engineering from Bogazici University, Istanbul, Turkey in 2000; the M.S. degree in electrical engineering from the State University of New York (SUNY) at Buffalo, Amherst, NY in 2002; and the Ph. D. degree in electrical and computer engineering at Carnegie Mellon University, Pittsburgh, PA in 2005. Her doctoral thesis was on dynamic load balancing in wireless networks. From November 2006 to October 2008, she held a Postdoctoral Fellowship in Computer, Computational, & Statistical Sciences Division at the Los Alamos National Laboratory of Department of Energy, where she worked on the design and development of self-organizing wireless networks with a focus on the impact of mobility and topology changes on the network performance. Since October 2008, she is with the Mobile Systems Group in the Networked and Embedded Systems Institute of University of Klagenfurt as a senior researcher. Her current research interests include design and analysis of cooperative networks, self-organization, and mobile networks.