AEROSPACE ENGINEERING SCIENCES

Seminar

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Optimal Deployment for Mobile Robots in Constrained Scenarios

The distributed control and coordination of vehicles endowed with inexpensive sensing, communication, and computation devices has attracted an intense research activity in the last years. Just like animals do, these groups of mobile robots are envisioned to deploy over certain regions, assume certain specified patterns, or jointly move in a synchronized manner. However, these coordinated tasks are to be achieved with little available communication between different robots, no information about the global environment state, and different dynamic and operational restrictions. In this talk, we present an overview of the problem of optimal deployment for multi-agent systems and solutions building on Lloyd's algorithm that have been studied to address some of these questions. Then, we will focus on some recent work that deals with non-holonomic and environmental constraints, and how the self/event-triggered principle using sparse communications/computations can be exploited in this context.

Friday, April 24, 2015
2:00 – 3:00 pm
KOBL 330

Biography:

Sonia Martínez is a Professor with the department of Mechanical and Aerospace Engineering at the University of California, San Diego. Dr. Martinez received her Ph.D. degree in Engineering Mathematics from the Universidad Carlos III de Madrid, Spain, in May 2002. Following a year as a Visiting Assistant Professor of Applied Mathematics at the Technical University of Catalonia, Spain, she obtained a Postdoctoral Fulbright Fellowship and held appointments at the Coordinated Science Laboratory of the University of Illinois, Urbana-Champaign during 2004, and at the Center for Control, Dynamical systems and Computation (CCDC) of the University of California, Santa Barbara during 2005. In a broad sense, Dr. Martínez' main research interests include the control of networked systems, multi-agent systems, nonlinear control theory, and robotics. For her work on the control of under-actuated mechanical systems she received the Best Student Paper award at the 2002 IEEE Conference on Decision and Control. She was the recipient of a NSF CAREER Award in 2007. For the paper "Motion coordination with Distributed Information," co-authored with Jorge Cortés and Francesco Bullo, she received the 2008 Control Systems Magazine Outstanding Paper Award. She has served on the editorial boards of the European Journal of Control (2011-2013), and currently serves on the editorial board of the Journal of Geometric Mechanics and IEEE Transactions on Control of Networked Systems.