

Title:

Advances on motion control of autonomous aerial vehicles

Abstract:

Unmanned Aerial Vehicles (UAVs) are rapidly evolving to become highly capable sensing platforms that can navigate and track trajectories with great accuracy and precision. While the motion control of UAVs in free flight is reaching its maturity, new challenges are being embraced that involve interaction with the environment and cooperation between multiple vehicles. In this talk, I will first give a brief overview of past work on trajectory tracking and path following control of quadrotor vehicles, which builds on Lyapunov stability theory to provide stabilizing control laws with wide if not global regions of attractions. I will then focus on three more recent topics of research: i) leader-follower formation planning and control for multi-vehicle systems; ii) visual servoing control for UAV landing based on optical flow measurements, and iii) and trajectory tracking control for slung-load aerial transportation. For all topics, both theoretical and experimental results will be highlighted.

Affiliation: Rita Cunha, Assistant Researcher with ISR/IST and invited Assistant Professor with DEEC

Short Biography

Rita Cunha received the Licenciatura degree in Information Systems and Computer Engineering and the Ph.D. degree in Electrical and Computer Engineering from the Instituto Superior Técnico (IST), Universidade de Lisboa, Portugal, in 1998 and 2007, respectively. She is currently an Assistant Researcher with the Institute for Systems and Robotics, LARSyS, Lisbon, and an Invited Assistant Professor with the Department of Electrical and Computer Engineering of IST. Her research interests include dynamical systems, nonlinear control theory, multi-vehicle systems, and vision-based control with application to unmanned aerial vehicles.



Date and place: January 31st, EA4, 5PM