ICRA 2014 WORKSHOP

AERIAL ROBOTS PHYSICALLY INTERACTING WITH THE ENVIRONMENT

May 31st, 2014; 9:00-17:30

Hong Kong Convention and Exhibition Centre





Main Organizer

Anibal Ollero

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Related Technical Committees

IEEE RAS TC 1 Aerial Robotics and Unmanned Aerial Vehicles

euRobotics, Aerial Robotics Topic Group

Statement of objectives

This workshop is dedicated to the methods, technologies and applications of aerial robots in physical contact with the environment.

The workshop will include presentations related to the main scientific and technological topics (see below) including the cooperation of several aerial robots. Thus, new methods and technologies together with simulations and implementations by using quadrotors, and helicopters will be included. Relevant application scenarios will be also analysed.

ICRA provides an ideal venue to effectively engage a wide audience of subject matter experts and hence motivates this workshop. The objectives of the workshop are:

(1) Present some of the scientific and technological results already obtained in dynamics of articulated aerial robots, control of aerial robots (helicopters and multi-copters) with manipulators, perception and planning in environments relevant for applications.

(2) Point out what is needed to solve practical applications.

(3) Facilitate discussion on technology gaps, research directions and identify collaborations.

Intended audience

Researchers and practitioners from academia, industry and government interested in the research, development and innovation topics related to the free flying robots and unmanned aerial systems interacting with the environment. The workshop will also explore technology transfer to industries as well as applications to inspection and maintenance (infrastructures and plants), search and rescue, environment monitoring, structure construction, space and others.

Program

TIME	TOPIC
09:00-09:10	Welcome and presentation
09:10-09:40	Aerial robots: From physical interactions to aerial robotic manipulation Anibal Ollero, Universidad de Sevilla and Scientific Advisor of FADA-CATEC (Spain)
09:40-10:10	Control, Estimation and Planning for Aerial Manipulation Justin Thomas, Shaojie Shen and V. Kumar , University of Pensylvania (USA)
10:10-10:30	Dicussion with short presentations by attendants
10:30-10:50	Coffee Break
10:50-11:20	Towards a full-actuated flying manipulator: concepts for helicopter platform and manipulator Konstantin Kondak, DLR (Germany)
11:20-11:50	External Generalized Forces Estimation in Aerial Manipulation Vincenzo Lippiello, Fabio Ruggiero and Bruno Siciliano Università di Napoli (Italy)
11:50-12:20	Towards Valve Turning using a Dual-Arm Aerial Manipulator Stjepan Bogdan and Matko Orsag, University of Zagreb (Croatia) Paul Oh and Christoper Korpela, Drexel University (USA)
12:20-12:30	Dicusssion
12:30-14:00	Lunch
14:00-14:30	Physically-based control of Flying robots: the power of mechanical analogies Stefano Stramigioli, University of Twente (The Netherlands)
14:30-15:00	Exploiting dynamics in the motion of articulated aerial robots Marin Kobilarov, Johns Hopkins University (USA)
15:00-15:30	Control of UAVs in hostile environments: the SHERPA perspective. Lorenzo Marconi, Università di Bologna (Italy)
15:30-16:00	Coffee Break and Poster Session
16:00-16:30	Real time aerial pose detection of bars for assembly structures by one or several aerial robots Adrian Amor, Francesc Moreno and Alberto Sanfeliu, Universitat Politècnica de Catalunya (Spain)
16:30-17:00	Planning and distributing tasks for structure assembly by multiple aerial manipulators Raphael Lallement and Rachid Alami , LAAS-CNRS (France) Ivan Maza and A. Ollero , Universidad de Sevilla (Spain)
17:00-17:30	Panel discussion with short presentations by attendants