

2nd IFAC Workshop on Research, Education and Development of Unmanned Aerial Systems 2013

**Compiègne, France
20 November 2013**

ISBN: 978-1-62993-725-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2013) by Elsevier Limited
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact the publisher, Elsevier Limited
at the address below.

Elsevier Limited
The Boulevard, Langford Lane
Kidlington OX5 1GB, United Kingdom

Phone: +44 (0)1865 844640
Fax: +44 (0)1865 843912

Email: eurobkinfo@elsevier.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Content List of 2nd IFAC Workshop on Research, Education and Development of Unmanned Aerial Systems

Technical Program for Wednesday November 20, 2013

WeM1T1	CT - Amphi
UAV Navigation and Control I (Regular Session)	
Chair: Cichella, Venanzio	Univ. of Illinois
09:10-09:30	WeM1T1.1
<i>L1 Backstepping for Robust Trajectory Tracking</i> , pp. 1-6.	
Mallikarjunan, Srinath	Unmanned Dynamics
Zuo, Zongyu	Beijing Univ. of Aeronautics and Astronautics
Nesbitt, Bill	Unmanned Dynamics, Inc.
Hovakimyan, Naira	UIUC
09:30-09:50	WeM1T1.2
<i>Modeling and Control of a Class of Multi-Propeller Aerial Vehicles</i> , pp. 7-12.	
Naldi, Roberto	Univ. di Bologna
Furci, Michele	Univ. of Bologna
Marconi, Lorenzo	Univ. di Bologna
09:50-10:10	WeM1T1.3
<i>A 3D Path-Following Approach for a Multicopter UAV on SO(3)</i> , pp. 13-18.	
Cichella, Venanzio	Univ. of Illinois
Choe, Ronald	Univ. of Illinois at Urbana-Champaign
Mehdi, Syed Bilal	Univ. of Illinois at Urbana-Champaign
Xargay, Enric	Univ. of Illinois at Urbana-Champaign
Hovakimyan, Naira	UIUC
Kaminer, Isaac	Naval Postgraduate School
Dobrokhodov, Vladimir	Naval Postgraduate School
10:10-10:30	WeM1T1.4
<i>Tracking Ground Targets from a UAV Using New P-N Constraints</i> , pp. 19-25.	
Siam, Mennatullah	Nile Univ.
EiHelw, Mohammed	Nile Univ.
WeM2T1	CT - Amphi
UAV Applications I (Regular Session)	
Chair: Lu, Geng	Tsinghua Univ.
Co-Chair: Blondel, Paul	UPJV
10:50-11:10	WeM2T1.1
<i>Robust Motion Controller Design and Implementation for Unmanned Helicopter</i> , pp. 26-31.	
Lu, Geng	Tsinghua Univ.
Zhong, Yi-Sheng	Tsinghua Univ.
11:10-11:30	WeM2T1.2
<i>A Real Time Parameter Identification of the Inertia Tensor for a Quad-Rotor Mini-Aircraft Using Adaptive Control</i> , pp. 32-37.	
López Gutierrez, Jesús Ricardo	CINVESTAV
Gonzalez Hernandez, Ivan	CINVESTAV
Flores Santiago, Jonathan	CINVESTAV
Ordaz Jimenez, Jose Jairo	CINVESTAV
Salazar, Sergio	CINVESTAV
Lozano, Rogelio	Univ. de Tech. de Compiegne
11:30-11:50	WeM2T1.3
<i>A Guide for Selecting Small Unmanned Aerial Systems for Scientific Research Applications</i> , pp. 38-45.	
Stark, Brandon	MESA Lab. Univ. of California, Merced
Smith, Brendan	Univ. of California at Merced
Chen, YangQuan	Univ. of California, Merced
11:50-12:10	WeM2T1.4
<i>How to Improve the HOG Detector in the UAV Context</i> , pp. 46-51.	
Blondel, Paul	UPJV

Potelle, Alex
 PEGARD, claude
 Lozano, Rogelio

UPJV
 UPJV
 Univ. de Tech. de Compiègne

WeA-1T1	CT - Amphi
Multi-Rotor Systems and Applications I (Regular Session)	
Chair: Ferrarese, Gastone	Univ. of Bologna
Co-Chair: Lugo Cárdenas, Israel	Centro de Investigación y de Estudios Avanzados del IPN
13:20-13:40	WeA-1T1.1
<i>A Total Energy Control System Design for the Transition Phase of a Tiltrotor Aerial Vehicle</i> , pp. 52-57.	
Hernandez-Garcia, Rogelio Gerardo	CINVESTAV ZACATENCO
Rodriguez-Cortes, Hugo	CINVESTAV-IPN
13:40-14:00	WeA-1T1.2
<i>Preliminary Design Analysis Methodology for Electric Multirotor</i> , pp. 58-63.	
Gatti, Mauro	Univ. of Bologna
Giulietti, Fabrizio	Univ. di Bologna
14:00-14:20	WeA-1T1.3
<i>Modeling and Simulation of a Quad-Tilt Rotor Aircraft</i> , pp. 64-70.	
Ferrarese, Gastone	Univ. of Bologna
Giulietti, Fabrizio	Univ. di Bologna
Avanzini, Giulio	Univ. del Salento
14:20-14:40	WeA-1T1.4
<i>Simulation Environment for the Development of Control Algorithms for Air or Water Vehicles</i> , pp. 71-78.	
Malo, Alejandro	CINVESTAV
Lugo Cárdenas, Israel	Centro de Investigación y de Estudios Avanzados del IPN
Espinoza Quesada, Eduardo Steed	Centro de Investigación y de Estudios Avanzados del I.P.N.
WeA-2T1	CT - Amphi
Vision in UAVs (Regular Session)	
Chair: Olivares-Mendez, Miguel A.	Interdisciplinary Centre for Security, Reliability and Trust (SnT) - Univ. of Luxembourg
Co-Chair: Romero, Hugo	UAEH
15:00-15:20	WeA-2T1.1
<i>Unsupervised Learning of Camera Exposure Control Using Randomly Connected Neural Networks*</i> . APDE	
Berthold, Oswald	Humboldt-Univ. zu Berlin
Hafner, Verena Vanessa	Humboldt-Univ. zu Berlin
15:20-15:40	WeA-2T1.2
<i>Autonomous Landing of an Unmanned Aerial Vehicle Using Image-Based Fuzzy Control</i> , pp. 79-86.	
Olivares-Mendez, Miguel A.	Interdisciplinary Centre for Security, Reliability and Trust (SnT)
Mondragon, Ivan F.	Ponticia Univ. Javeriana. Industrial Engineering Departmen
campoy, Pascual	Univ. Pol. Madrid
15:40-16:00	WeA-2T1.3
<i>Vision-Based Autonomous Control of a Quadrotor UAV Using an Onboard RGB-D Camera and Its Application to Haptic Teleoperation</i> , pp. 87-92.	
Stegagno, Paolo	Max Planck Inst. for Biological Cybernetics
Basile, Massimo	Max Planck Inst. for Biological Cybernetics
Bülthoff, Heinrich H.	Max Planck Inst. for Biological Cybernetics
Franchi, Antonio	Max Planck Inst. for Biological Cybernetics
16:00-16:20	WeA-2T1.4
<i>Real-Time Tracking by a Quadrotor for Arbitrary Objects Defined Online</i> , pp. 93-98.	
Romero, Hugo	UAEH
Salazar, Sergio	CINVESTAV
Lozano, Rogelio	Univ. de Tech. de Compiègne
16:20-16:40	WeA-2T1.5
<i>Real-Time Adaptive Multi-Classifer Multi-Resolution Visual Tracking Framework for Unmanned Aerial Vehicles</i> , pp. 99-106.	
Fu, Changhong	Computer Vision Group, Center for Automation and Robotics, Pol.
Suarez Fernandez, Ramon Antonio	Univ. Pol. de Madrid

Olivares-Mendez, Miguel A. campoy, Pascual	Interdisciplinary Centre for Security, Reliability and Trust (Sn Univ. Pol. Madrid
16:40-17:00	WeA-2T1.6
<i>Vision-Based Window Estimation for MAV in Unknown Urban Environments</i> , pp. 107-111.	
ZHOU, Shuting	Univ. of Tech. of Compiegne
Flores, Gerardo	Univ. of Tech. of Compiegne
Lozano, Rogelio	Univ. de Tech. de Compiegne
Castillo, Pedro	Univ. De Tech. De Compiegne
WeA-2T2	CT -Salle A
UAV Navigation and Control II (Regular Session)	
Co-Chair: Mercado Ravell, Diego Alberto	UTC
15:00-15:20	WeA-2T2.1
<i>Investigation of the Alternative Way of an Aircraft Flight Semi-Automatic Control</i> , pp. 112-119.	
Bondarets, Anatolij	Beriev aircraft company
15:20-15:40	WeA-2T2.2
<i>A Waypoint-Based Guidance Algorithm for Mini UAVs</i> , pp. 120-125.	
Capello, Elisa	Pol. di Torino
Guglieri, Giorgio	Pol. di Torino
Quagliotti, Fulvia	Pol. di Torino - Dipartimento di Ingegneria Meccanica ed
15:40-16:00	WeA-2T2.3
<i>Underactuated Waypoint Tracking of a Fixed-Wing UAV</i> , pp. 126-133.	
Espen, Oland	Narvik Univ. Coll.
Schlanbusch, Rune	Narvik Univ. Coll.
Kristiansen, Raymond	Narvik Univ. Coll.
16:00-16:20	WeA-2T2.4
<i>Anti-Swing Nonlinear Path Tracking Controller for Helicopter Slung Load System</i> , pp. 134-141.	
El-Ferik, Sami	King Fahd Univ. of Petroleum and Minerals
Syed, Asim H.	King Fahd Univ. of Petroleum and Minerals
Omar, Hanafy M.	Qassim Uinversity, Burriydah.
Deriche, Mohamed A.	King Fahd Univ. of Petroleum and Minerals
16:20-16:40	WeA-2T2.5
<i>Quadrotors Trajectory Tracking Control with Inaccurate GPS Measurements</i> , pp. 142-146.	
Mercado Ravell, Diego Alberto	UTC
Castro-Linares, Rafael	CINVESTAV-IPN
Lozano, Rogelio	Univ. de Tech. de Compiegne
16:40-17:00	WeA-2T2.6
<i>A GIS Application for UAV Flight Planning</i> , pp. 147-151.	
Mangiameli, Michele	Univ. of Enna
Muscato, Giovanni	Univ. di Catania
Mussumeci, Giuseppe	Univ. of Catania
Milazzo, Cristina	Univ. of Enna

Technical Program for Thursday November 21, 2013

ThM-1T1	CT - Amphi
Cooperative Control Designs for Multiple Aerial Vehicles I (Regular Session)	
Chair: Espen, Oland	Narvik Univ. Coll.
10:00-10:20	ThM-1T1.1
<i>Task Allocation Algorithm for the Cooperating Group of Light Autonomous Unmanned Aerial Vehicles</i> , pp. 152-155.	
Amelin, Konstantin	Saint Petersburg State Univ.
Amelina, Natalia	Saint-Petersburg State Univ.
Granichin, Oleg	Saint Petersburg State Univ.
Putov, Victor	Saint Petersburg Electrotechnical Univ. "LETI"
10:20-10:40	ThM-1T1.2
<i>Real-Time Particle Tracking Using a Formation of UAVs</i> , pp. 156-161.	
Espen, Oland	Narvik Univ. Coll.
Kristiansen, Raymond	Narvik Univ. Coll.
10:40-11:00	ThM-1T1.3
<i>Underactuated Control of Quadrotors with Collision Avoidance</i> , pp. 162-167.	
Espen, Oland	Narvik Univ. Coll.
Andersen, Tom Stian	Narvik Univ. Coll.
Kristiansen, Raymond	Narvik Univ. Coll.
ThM-T1T1	CT - Amphi
UAS Modeling and Control I (Regular Session)	
Chair: Castillo, Pedro	Univ. De Tech. De Compiegne
Co-Chair: Perez-Montenegro, Carlos	Pol. di Torino
11:20-11:40	ThM-T1T1.1
<i>Control Architecture and Simulation of the Borea Quadrotor</i> , pp. 168-173.	
Perez-Montenegro, Carlos	Pol. di Torino
Lotufo, Mauricio	Pol. di Torino
Canuto, Enrico	Pol. di Torino
11:40-12:00	ThM-T1T1.2
<i>A HOSM Control Algorithm to Stabilize the Quadrotor Vehicle with Experimental Validation</i> , pp. 174-180.	
Castillo, Pedro	Univ. De Tech. De Compiegne
Ibarra, Efrain	UANL
Jimenez-Lizarraga, Manuel	Autonomous Univ. of Nuevo León, México.
ThA-1T1	CT - Amphi
UAS New Designs and Prototypes (Regular Session)	
Chair: Gassmann, Vincent	French German Res. Inst. of Saint-Louis
13:00-13:20	ThA-1T1.1
<i>Flying Robot with Undulating Wings</i> , pp. 181-186.	
xu, yue	Nantong huabiao new materials company
wang, haibin	Nantong vocational Univ.
13:20-13:40	ThA-1T1.2
<i>Control of a Gun-Launched MAV for Scene Observation</i> , pp. 187-192.	
Gassmann, Vincent	French German Res. Inst. of Saint-Louis
Drouot, Adrien	CRAN - IUT Longwy
Chauffaut, Corentin	Heudiasyc Lab. UMR CNRS 7253
ROUSSEL, Emmanuel	French German Res. Inst. of Saint-Louis
Changey, Sebastien	ISL - Fr.-Ge. Res. Inst. of Saint-Louis
GNEMMI, Patrick	French German Res. Inst. of Saint-Louis
richard, edouard	nancy Univ.
Boutayeb, Mohamed	Nancy Univ.
Lozano, Rogelio	Univ. de Tech. de Compiegne
13:40-14:00	ThA-1T1.3
<i>Concept Design for an Unmanned Aerial Vehicle That Will Perform Exploration Missions in Colombia</i> , pp. 193-197.	

Rocha, Miller Andrés	Univ. Militar Nueva Granada
Solaque, Leonardo	Univ. Militar Nueva Granada
14:00-14:20	ThA-1T1.4
<i>Optimization of an Electric Propulsion System*</i> . APBE	
Cabarbaye, Aurélien	cinvestav
Lozano, Rogelio	Univ. de Tech. de Compiegne
Cabarbaye, André	CAB INNOVATION
Bonilla, Moises E.	CINVESTAV-IPN
14:20-14:40	ThA-1T1.5
<i>An Open-Source Hardware/Software Architecture for Quadrotor UAVs</i> , pp. 198-205.	
Spica, Riccardo	Univ. of Rennes I and IRISA/INRIA Rennes
Robuffo Giordano, Paolo	IRISA
Ryll, Markus	Max Planck Inst. for Biological Cybernetics
Bülthoff, Heinrich H.	Max Planck Inst. for Biological Cybernetics
Franchi, Antonio	Max Planck Inst. for Biological Cybernetics
ThA-2T1	CT - Amphi
Micro and Mini UAVs (Regular Session)	
Co-Chair: Phung, Duc Kien	Univ. Pierre and Marie Curie
15:00-15:20	ThA-2T1.1
<i>Switching Algorithm for Data Fusion of Small Low-Cost UAV Navigation System</i> , pp. 206-211.	
Andrievsky, Boris	Inst. for Problems of Mechanical Engineering RAS
Kuznetsov, Nikolay	Saint-Petersburg State Univ.
Kuznetsova, Olga	Saint Petersburg State Univ.
Leonov, Gennady	Saint-Peterburg State Univ.
15:20-15:40	ThA-2T1.2
<i>Modeling and Energy Evaluation of Small Convertible UAVs</i> , pp. 212-219.	
Phung, Duc Kien	Univ. Pierre and Marie Curie
MORIN, Pascal	UPMC
15:40-16:00	ThA-2T1.3
<i>Efficient Collision-Free Trajectory Planning for WSN Data Collection with Unmanned Aerial Vehicles</i> , pp. 220-225.	
Cobano, José Antonio	Univ. of Seville
Alejo, David	Univ. of Seville
Heredia, Guillermo	Univ. of Seville
Martinez, José Ramiro	Univ. of Seville
Ollero, Anibal Ollero	Escuela Superior de Ingenieros - Univ. de Sevilla
16:00-16:20	ThA-2T1.4
<i>A Randomized Approach for Robust Control of Uncertain UAVs</i> , pp. 226-231.	
Capello, Elisa	Pol. di Torino
Tempo, Roberto	CNR-IEIT, Pol. di Torino
16:20-16:40	ThA-2T1.5
<i>Inverse Simulation of Unconventional Maneuvers for a Quadcopter with Tilting Rotors</i> , pp. 232-239.	
Avanzini, Giulio	Univ. del Salento
Giulietti, Fabrizio	Univ. di Bologna
Piacenza, Irene Alice	Pol. di Torino
16:40-17:00	ThA-2T1.6
<i>Autonomous Control and Stabilization System for Unmanned Aerial Vehicles</i> , pp. 240-243.	
Kopichev, Michael	Saint-Petersburg State Electrotechnical Univ. "LETI"
Ignatiev, Konstantin	Saint-Petersburg State Electrotechnical Univ. "LETI"
Putov, Anton	Saint-Petersburg State Electrotechnical Univ. "LETI"
ThA-2T2	CT - Salle A
UAS Control and Data Fusion (Regular Session)	
Chair: Lynen, Simon	ETH Zurich
Co-Chair: Raharijaona, Thibaut	Inst. of Movement Science, Aix-Marseille Univ.
15:00-15:20	ThA-2T2.1
<i>Fusion Using Target Motion Analysis and Geographic Data for Maritime Applications</i> , pp. 244-250.	

Flores Gomez, Sahel Iskander	Cranfield Univ.
Shin, Hyo-Sang	Cranfield Univ.
Tsourdos, Antonios	Cranfield Univ.
15:20-15:40	ThA-2T2.2
<i>Tightly Coupled Visual-Inertial Navigation System Using Optical Flow</i> , pp. 251-256.	
Lynen, Simon	ETH Zurich
Omari, Sammy	ETH Zurich
Wueest, Matthias	ETH Zurich
Achtelik, Markus Wilhelm	ETH Zurich
Sieewart, Roland	ETH
15:40-16:00	ThA-2T2.3
<i>A Tiny Lensless Position Sensing Device for the Tracking of Active Markers</i> , pp. 257-262.	
Raharijaona, Thibaut	Inst. of Movement Science, Aix-Marseille Univ.
Mignon, Paul	Inst. des sciences du mouvement Lab. de Biorobotique
Juston, Raphael	Aix-Marseille Univ. CNRS, ISM UMR7287, Biorobotics, Inst.
viollet, stephane	Aix-Marseille Univ. Inst. of Movement Sciences, B
16:00-16:20	ThA-2T2.4
<i>Model Identification and Data Fusion for the Purpose of the Altitude Control of the VTOL Aerial Robot</i> , pp. 263-269.	
Janusz, Wojciech, Cezary	Silesian Univ. of Tech.
Czyba, Roman	Silesian Tech. Univ.
Szafanski, Grzegorz Jaroslaw	Silesian Univ. of Tech.
16:20-16:40	ThA-2T2.5
<i>Rainbow Runner Glider As a Testbed for Robust and Adaptive Control Methods</i> , pp. 270-275.	
Andrievsky, Boris	Inst. for Problems of Mechanical Engineering RAS
Fradkov, Alexander L.	Russian Acad. of Sciences
Kravchuk, Kirill	The Second Saint-Petersburg Gymnasium
16:40-17:00	ThA-2T2.6
<i>Suboptimal Control of Aircraft Lateral Motion</i> , pp. 276-282.	
Furtat, Igor	Inst. of Problems of Mechanical Engineering Russian Acad.
Putov, Victor	Saint Petersburg Electrotechnical Univ. "LETI"

Technical Program for Friday November 22, 2013

FrM-1T1	CT - Amphi
UAV Applications II (Regular Session)	
Chair: Stark, Brandon	MESA Lab. Univ. of California, Merced
Co-Chair: Ferreira, António Sérgio	Univ. do Porto
09:00-09:20	FrM-1T1.1
<i>Performance Guarantees of a Sub-Optimal Policy for a Robotic Surveillance Application</i> , pp. 283-290.	
Park, Myoungkuk	TAMU
Kalyanam, Krishnamoorthy	Infoscitex Corp.
Darbha, Swaroop	Texas A & M Univ.
Khargonekar, Pramod P.	Univ. of Florida
Chandler, Phillip R.	USAF
Pachter, Meir	AFIT/ENG
09:20-09:40	FrM-1T1.2
<i>Using Low Cost Open Source UAVs for Marine Wild Life Monitoring - Field Report</i> , pp. 291-295.	
Fortuna, Joao	Faculty of Engineering, Univ. of Porto
Ferreira, Filipe	FEUP (Faculty of Engineering - Univ. of Porto)
Gomes, Ricardo	Faculdade de Engenharia da Univ. do Porto - LSTS
Ferreira, António Sérgio	Univ. do Porto
Sousa, Joao	Fac. Engenharia Univ. do Porto
09:40-10:00	FrM-1T1.3
<i>Unmanned Aerial System for Precision Agriculture Applications Using EGNOS*</i> . POE	
Alarcon, Francisco	Center for Advanced Aerospace Tech.
Viguria, Antidio	Center for Advanced Aerospace Tech.
Diaz, Luis	Center for Advanced Aerospace Tech.
Jimenez, Antonio	Center for Advanced Aerospace Tech.
Zarco, Pablo	IAS-CSIC
Van Valkengoed, Eric	Terrasphere
Van der Voet, Paul	Terrasphere
Ollero, Anibal Ollero	Escuela Superior de Ingenieros - Univ. de Sevilla
10:00-10:20	FrM-1T1.4
<i>Optimal Pest Management by Networked Unmanned Cropdusters in Precision Agriculture: A Cyber-Physical System Approach</i> , pp. 296-302.	
Stark, Brandon	MESA Lab. Univ. of California, Merced
Rider, Sean	Univ. of California at Merced
Chen, YangQuan	Univ. of California, Merced
FrA-1T1	CT - Amphi
UAV Aerial Manipulations and Path Planning (Regular Session)	
Chair: Haugen, Joakim	Norwegian Univ. of Science and Tech.
Co-Chair: Shanmugavel, Madhavan	Monash Univ.
13:00-13:20	FrA-1T1.1
<i>Mechanical Design of a 6-DOF Aerial Manipulator for Assembling Bar Structures Using UAVs*</i> . POE	
Cano, Raul	Centre for Advanced Aerospace Tech.
Perez, Carlos	Centre for Advanced Aerospace Tech.
Pruano, Francisco	Centre for Advanced Aerospace Tech.
Ollero, Anibal Ollero	Escuela Superior de Ingenieros - Univ. de Sevilla
Heredia, Guillermo	Univ. of Seville
13:20-13:40	FrA-1T1.2
<i>Modeling and Control of Aerial Manipulation Vehicle with Visual Sensor</i> , pp. 303-309.	
Kannan, Somasundar	SnT- Univ. of Luxembourg
Olivares-Mendez, Miguel A.	Interdisciplinary Centre for Security, Reliability and Trust (Sn
Voos, Holger	Univ. of Luxembourg
13:40-14:00	FrA-1T1.3
<i>Dynamic Risk Uncertainties of Cooperative Sites in Path Planning of UAVs</i> , pp. 310-315.	
Shanmugavel, Madhavan	Monash Univ.

14:00-14:20	FrA-1T1.4
<i>UAV Path Planning for Multitarget Tracking with Experiments</i> , pp. 316-323.	
Haugen, Joakim	Norwegian Univ. of Science and Tech.
Imslund, Lars	Norwegian Univ. of Science and Tech.
FrA-2T1	CT - Amphi
Cooperative Control Designs for Multiple Aerial Vehicles II (Regular Session)	
Chair: Fantoni, Isabelle	Univ. de Tech. de Compiègne
Co-Chair: Ailon, Amit	Ben Gurion Univ. of The Negev
15:00-15:20	FrA-2T1.1
<i>Formation Control Strategies for Autonomous Quadrotor-Type Helicopters</i> , pp. 324-329.	
Ailon, Amit	Ben Gurion Univ. of The Negev
Arogeti, Shai	Nanyang Tech. Univ.
15:20-15:40	FrA-2T1.2
<i>Cooperative Perimeter Surveillance Using Aerial Robots and Fixed Ground Stations</i> , pp. 330-336.	
Acevedo, Jose Joaquin	Univ. de Sevilla
Arrue, Begoña C.	Univ. of Seville
Maza, Ivan	Univ. of Seville
Ollero, Anibal Ollero	Escuela Superior de Ingenieros - Univ. de Sevilla
15:40-16:00	FrA-2T1.3
<i>Modeling and Decentralized Control for the Multiple UAVs Formation Based on Lyapunov Design and Redesign</i> , pp. 337-344.	
HOU, Zhicheng	Univ. of Tech. of Compiègne
Fantoni, Isabelle	Univ. de Tech. de Compiègne
Zavala-Rio, Arturo	Inst. Potosino de Investigacion Cientifica yTecnologica
16:20-16:40	FrA-2T1.4
<i>Synchronized Flight Formation of Quadrotors</i> , pp. 345-351.	
Sumano Mejia, Eva	Centro de Investigación y de Estudios Avanzados del I.P.N.
Castro-Linares, Rafael	CINVESTAV-IPN
Lozano, Rogelio	Univ. de Tech. de Compiègne
Salazar, Sergio	CINVESTAV
16:40-17:00	FrA-2T1.5
<i>Communication-Aware Task Assignment for UAV Cooperation in Urban Environments</i> , pp. 352-359.	
Gorriz Vilar, Roberto	Cranfield Univ.
Shin, Hyo-Sang	Cranfield Univ.