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Content List of 2013 International Conference on Unmanned Aircraft Systems

Technical Program for Wednesday May 29, 2013

WeAT1	Buckhead Ballroom
UAS Applications I (Regular Session)	
Chair: Claudel, Christian	KAUST
Co-Chair: Cook, Kevin M. B.	Brigham Young Univ.

WeAT2	Piedmont
UAS Path Planning I (Regular Session)	
Chair: Ho, Tu Dac	Norwegian Univ. of Science and Tech.
Co-Chair: Zhang, Baochang	Beihang Univ.

WeAT3	Peachtree
Energy and Control in UAS (Regular Session)	
Chair: Coopmans, Cal	Utah State Univ.
Co-Chair: Zhou, Min	Georgia Inst. of Tech.

Multirotor Unmanned Aerial Vehicles, pp. 105-113.

Podhradsky, Michal	Utah State Univ.
Coopmans, Cal	Utah State Univ.
Jensen, Austin	Utah State Univ.

10:50-11:15 WeAT3.3

Transient Characteristics of a Fuel Cell Powered UAV Propulsion System, pp. 114-123.

Zhou, Min	Georgia Inst. of Tech.
Prasad, J.V.R.	Georgia Inst. of Tech.

11:15-11:40 WeAT3.4

Energy Management in Swarm of Unmanned Aerial Vehicles, pp. 124-133.

Leonard, Jeremie	Cranfield Univ.
Savvaris, Al	Cranfield Univ.
Tsourdos, Antonios	Cranfield Univ.

11:40-12:05 WeAT3.5

Hardware-In-The-Loop Simulation of an Attitude Control with Switching Actuators for SUAV, pp. 134-142.

Bittar, Adriano	Inst. Tecnológico de Aeronáutica
Oliveira, Neusa Maria Franco de	Inst. Tecnológico de Aeronáutica

12:05-12:30 WeAT3.6

Gun-Launched Micro Air Vehicle: Concept, Challenges and Results, pp. 143-151.

Roussel, Emmanuel	ISL
Gnemmi Patrick, Gnemmi Patrick	French German Res. Inst. of Saint-Louis
Changey, Sebastien	ISL - French-German Res. Inst. of Saint-Louis

WeAT4 Veranda

UAS Operations, Regulations and Airworthiness (Regular Session)

Chair: Voss, Paul	Smith Coll.
Co-Chair: Stark, Brandon	Univ. of California, Merced

10:00-10:25 WeAT4.1

ADS-B for Small Unmanned Aerial Systems: Case Study and Regulatory Practices, pp. 152-159.

Stark, Brandon	Univ. of California, Merced
Stevenson, Brennan	Univ. of California, Merced
Chen, YangQuan	Univ. of California, Merced

10:25-10:50 WeAT4.2

The Role of Unmanned Aerial System (UAS) in Decision Process by Operational Environment's Risk Level, pp. 160-166.

Baser, Muhammed	TURKISH AIR WAR Coll.

10:50-11:15 WeAT4.3

A Different View to Future Use of Unmanned Aerial Vehicles, pp. 167-172.

Ozartan, Mustafa	AIR WAR Coll.

11:15-11:40 WeAT4.4

Rethinking the Regulatory Framework for Small Unmanned Aircraft: The Case for Protecting Privacy and Property Rights in the Lowermost Reaches of the Atmosphere, pp. 173-178.

Voss, Paul	Smith Coll.

11:40-12:05 WeAT4.5

OctoSLAM: A 3D Mapping Approach to Situational Awareness of Unmanned Aerial Vehicles, pp. 179-188.

Fossel, Joscha-David	Maastricht Univ.
Hennes, Daniel	Maastricht Univ.
Claes, Daniel	Maastricht Univ.
Alers, Sjriek	Maastricht Univ.
Tuyls, Karl	Maastricht Univ.

12:05-12:30 WeAT4.6

UAS in the (inter)national Airspace: Approaching the Debate from an Ethnicity Perspective, pp. 189-192.

Bakx, Gwendolyn Catharina Hermana	Netherlands Defence Acad.
Nyce, James	Ball State Univ.

WeBT1 Buckhead Ballroom

UAS Applications II (Regular Session)

Chair: Saripalli, Srikanth	Arizona State Univ.
Co-Chair: Zhu, Senqiang	Nanyang Tech. Univ.

15:00-15:25 WeBT1.1

Cooperative Control of Multiple UAVs for Moving Source Seeking, pp. 193-202.

Zhu, Senqiang	Nanyang Tech. Univ.
Wang, Danwei	Nanyang Tech. Univ.
Low, Chang Boon	DSO National Lab.

15:25-15:50 WeBT1.2

Statistical Methods and Weather Based Decision Making in Meteorological Support for Unmanned Aerial Vehicles (UAVs), pp. 203-207.

Wantuch, Ferenc	National Transport Authority
Bottyán, Zsolt	Faculty of Military Sciences and Officer Training, National Uni
Tuba, Zoltán	National Univ. of Public Service
Hadobács, Katalin	Geoinformation Service, Hungarian Defence Forces

15:50-16:15 WeBT1.3

AUTOKITE: Experimental Use of a Low Cost Autonomous Kite Plane for Aerial Photography and Reconnaissance, pp. 208-213.

McGarey, Patrick	Arizona State Univ.
Saripalli, Srikanth	Arizona State Univ.

16:15-16:40 WeBT1.4

Design of a Commercial Hybrid VTOL UAV System, pp. 214-220.

Ozdemir, Ugur	Istanbul Tech. Univ.
Aktaş, Yucel Orkut	Istanbul Tech. Univ.
Demirbag, Karaca	Havelsan Inc.
Erdem, Ahmet	Havelsan Inc.
Kalaycioglu, Ganime Duygu	Havelsan Inc.
Ozkol, Ibrahim	Istanbul Tech. Univ.
Inalhan, Gokhan	ISTANBUL Tech. Univ.

16:40-17:05 WeBT1.5

A Survey of Unmanned Aerial Vehicles (UAVs) for Traffic Monitoring, pp. 221-234.

Kanistras, Konstantinos	Univ. of Denver
Martins, Goncalo	Univ. of Denver
Rutherford, Matthew	Univ. of Denver
Valavanis, Kimon	Univ. of Denver

17:05-17:30 WeBT1.6

Developing an Unpaved Road Assessment System for Practical Deployment with High-Resolution Optical Data Collection Using a Helicopter UAV, pp. 235-243.

Dobson, Richard	Michigan Tech. Res. Inst.
Brooks, Colin	Michigan Tech. Res. Inst.
Roussi, Chris	Michigan Tech. Res. Inst.
Colling, Tim	Michigan Tech. Univ.

17:30-17:55 WeBT1.7

Automatic System for Overhead Power Line Inspection Using an Unmanned Aerial Vehicle, pp. 244-252.

Larrauri, Juan I.	Univ. of Deusto

WeBT2 Piedmont

UAS Path Planning II (Regular Session)

Chair: Zhang, Baochang	Beihang Univ.
Co-Chair: Romero, Hugo	ICBI - UAEH

15:00-15:25 WeBT2.1

Optimal Search Mission with Unmanned Aerial Vehicles Using Mixed Integer Linear Programming, pp. 253-259.

Forsmo, Erik Johannes	Norwegian Univ. of Science and Tech.
Grøtli, Esten Ingar	Norwegian Univ. of Science and Tech.
Fossen, Thor I.	Norwegain Univ. of Sci and Tech.
Johansen, Tor Arne	Norweigian Univ. of Sci. & Tech.

15:25-15:50 WeBT2.2

Decentralized Control of Unmanned Aerial Vehicles for Multitarget Tracking, pp. 260-268.

Ragi, Shankarachary	Colorado State Univ.
Chong, Edwin K. P.	Colorado State Univ.

15:50-16:15 WeBT2.3

GPGPU Accelerated Potential Field Based Autonomous Air Refueling Approach for UAVs, pp. 269-277.

Cetin, Omer	Turkish Air Force Acad.
Yilmaz, Guray	Computer Engineering Department, Turkish Air Force Acad.

16:15-16:40 WeBT2.4

Anticipating Stochastic Observation Loss During Optimal Target Tracking by a Small Aerial Vehicle, pp. 278-287.

Anderson, Ross	Univ. of California, Santa Cruz
Milutinovic, Dejan	Univ. of California at Santa Cruz

16:40-17:05 WeBT2.5

An Efficient Spline-Based RRT Path Planner for Non-Holonomic Robots in Cluttered Environments, pp. 288-297.

Yang, Kwangjin	Korea Air Force Acad.

17:05-17:30 WeBT2.6

Particle Swarm Optimization for Collision-Free 4D Trajectory Planning in Unmanned Aerial Vehicles, pp. 298-307.

Alejo, David	Univ. of Seville
Cobano, Jose Antonio	Univ. of Seville
Heredia, Guillermo	Univ. of Seville
Ollero, Anibal	Univ. de Sevilla

17:30-17:55 WeBT2.7

Optimal UAV Path Planning in a 3D Threat Environment by Using Parallel Evolutionary Algorithms, pp. 308-317.

Ozalp, Nuri	Tubitak BİLGEM BTE
Sahingoz, Ozgur Koray	Turkish Air Force Acad.

WeBT3 Peachtree

Image and Vision in UAS (Regular Session)

Chair: Orsag, Matko	Univ. of Zagreb, Faculty of Electrical Engineering andComputing
Co-Chair: Schauwecker, Konstantin	Univ. of Tuebingen

15:00-15:25 WeBT3.1

Onboard Monocular Vision for Landing of an MAV on a Landing Site Specified by a Single Reference Image, pp. 318-325.

Yang, Shaowu	Univ. of Tübingen
Scherer, Sebastian A.	Univ. of Tübingen
Schauwecker, Konstantin	Univ. of Tuebingen
Zell, Andreas	Univ. of Tübingen

15:25-15:50 WeBT3.2

Omnidirectional Vision Based Surveillance with the Spincopter, pp. 326-332.

Haus, Tomislav	Univ. of Zagreb
Orsag, Matko	Univ. of Zagreb
Bogdan, Stjepan	Univ. of Zagreb

15:50-16:15 WeBT3.3

On-Board Dual-Stereo-Vision for Autonomous Quadrotor Navigation, pp. 333-342.

Schauwecker, Konstantin	Univ. of Tuebingen
Zell, Andreas	Univ. of Tübingen

16:15-16:40 WeBT3.4

Relative Navigation Approach for Vision-Based Aerial GPS-Denied Navigation, pp. 343-352.

Leishman, Robert	Brigham Young Univ.
McLain, Timothy W.	Brigham Young Univ.
Beard, Randal W.	Brigham Young Univ.

16:40-17:05 WeBT3.5

An Alternative Closed-Loop Vision-Based Control Approach for Unmanned Aircraft Systems with Application to a Quadrotor, pp. 353-358.

Fahimi, Farbod	UAHuntsville
Thakur, Karansingh	UAHuntsville

17:05-17:30 WeBT3.6

Inference of Flight Angles Associating the Flight Images Movement with Camera Parameters, pp. 359-365.

Macena, Milton	UFAM
Pio, José	UFAM

17:30-17:55 WeBT3.7

A Multi-Layered Approach for Site Detection in UAS Emergency Landing Scenarios Using Geometry-Based Image Segmentation, pp. 366-372.

Mejias Alvarez, Luis	Queensland Univ. of Tech.
Fitzgerald, Daniel	AeroSys Pty Ltd

WeBT4 Veranda

UAS Testbeds (Regular Session)

Chair: Coopmans, Cal	Utah State Univ.
Co-Chair: Smith, Brendan	Univ. of California, Merced

15:00-15:25 WeBT4.1

A Novel Actuation Concept for a Multi Rotor UAV, pp. 373-382.

Segui-Gasco, Pau	Cranfield Univ.

Al-Rihani, Yazan	KADDB
Shin, Hyo-Sang	Cranfield Univ.
Savvaris, Al	Cranfield Univ.

15:25-15:50 WeBT4.2

A HIL Testbed for Small Unmanned Helicopter's Initial Controller Gain Tuning, pp. 383-391.

Pourrezaei Khaligh, Sepehr	Univ. of Alberta
Martinez, Alejandro	Univ. of Alberta
Fahimi, Farbod	UAHuntsville
Koch, Charles Robert	Univ. of Alberta

15:50-16:15 WeBT4.3

Experimental Validation of a Helicopter Autopilot: Time-Varying Trajectory Tracking, pp. 392-397.

Godbolt, Bryan	Univ. of Alberta
Vitzilaios, Nikolaos	Univ. of Denver
Bergen, Chris	Bergen R/C Helicopters
Lynch, Alan	U Alberta

16:15-16:40 WeBT4.4

Dynamic Flight Modeling of a Multi-Mode Flying Wing Quadrotor Aircraft, pp. 398-404.

Ferrell, Peter	Univ. of California, Merced
Smith, Brendan	Univ. of California, Merced
Stark, Brandon	Univ. of California, Merced
Chen, YangQuan	Univ. of California, Merced

16:40-17:05 WeBT4.5

On the Development of a Small Hand-Held Multi-UAV Platform for Surveillance and Monitoring, pp. 405-412.

Avellar, Gustavo Silva Castilho de	UFMG
Thums, Gonçalo D.	UFMG
Lima, Rogério Rodrigues	UFMG
Iscold, Paulo	UFMG
Torres, Leonardo	Federal Univ. of Minas Gerais
Pereira, Guilherme A. S.	Univ. Federal de Minas Gerais

ThAT1	Buckhead Ballroom
Advanced Controls in UAS I (Regular Session)	
Chair: Wulff, Kai	Ilmenau Univ. of Tech.
Co-Chair: Kim, Seungkeun	Chungnam National Univ.
10:00-10:25	ThAT1.1
Optimal Tracking Control System Design for a Ring-Wing Type UAV, pp. 413-422.	
Jeong, Junho	Chungnam National Univ.
Kim, Seungkeun	Chungnam National Univ.
Suk, Jinyoung	Chungnam National Univ.
10:25-10:50	ThAT1.2
Integral Sliding Mode Backstepping Control of Quadrotors for Robust Position Tracking, pp. 423-432.	
Ramirez Rodriguez, Heriberto	Centro de Investigación y de Estudios Avanzados del IPN (CINVEST
Parra-Vega, Vicente	CINVESTAV
Sanchez, Anand	CINVESTAV
Garcia Salazar, Octavio	Aerospace Engineering Res. and Innovation Center (CIIIA) - U
10:50-11:15	ThAT1.3
Proportional Integral Derivative and Linear Quadratic Regulation of a Multirotor Attitude: Mathematical Modelling, Simulations and Experimental Results, pp. 433-442.	
Gargioli, Alessio	Pol. di Torino
Rinaldi, Filippo	Pol. di Torino
Quagliotti, Fulvia	Pol. di Torino
11:15-11:40	ThAT1.4
Improving Hovering Performance of Tethered Unmanned Helicopters with Nonlinear Control Strategies, pp. 443-452.	
Sandino, Luis A.	Univ. of Seville
Bejar, Manuel	Univ. Pablo de Olavide
Kondak, Konstantin	DLR (German Aerospace Center)
Ollero, Anibal	Univ. de Sevilla
11:40-12:05	ThAT1.5
Experimental Real-Time Validation of an Attitude Nonlinear Controller for the Quadrotor Vehicle, pp. 453-460.	
Rodriguez Cortes, Hugo	CINVESTAV-IPN
Corona-Sanchez, José J.	ESIME Atzcapotzalco
12:05-12:30	ThAT1.6
Randomized Approaches and Adaptive Control for QuadRotor UAVs, pp. 461-470.	
Capello, Elisa	Pol. di Torino
Quagliotti, Fulvia	Pol. di Torino
Tempo, Roberto	Pol. di Torino

ThAT2	Piedmont
UAS Sensor Fusion (Regular Session)	
Chair: Jensen, Austin	Utah State Univ.
Co-Chair: Lozano, Rogelio	Univ. de Tech. de Compiegne
10:00-10:25	ThAT2.1
Monocular Visual Mapping for Obstacle Avoidance on UAVs, pp. 471-479.	
Magree, Daniel	Georgia Inst. of Tech.
Johnson, Eric N.	Georgia Inst. of Tech.
Mooney, John G.	Georgia Inst. of Tech.
10:25-10:50	ThAT2.2
Experimental Validation of a Quaternion-Based Attitude Estimation with Direct Input to a Quadcopter Control System, pp. 480-485.	
Magnussen, Øyvind	Univ. of Agder
Ottestad, Morten	Univ. of Agder
Hovland, Geir	Univ. of Agder
10:50-11:15	ThAT2.3
GPS/INS/Optic Flow Data Fusion for Position and Velocity Estimation, pp. 486-491.	
Mercado Ravell, Diego Alberto	Univ. de Tech. Compiegne
Flores Colunga, Gerardo Ramon	Univ. of Tech. of Compiègne
Castillo, Pedro	Univ. De Tech. De Compiegne
Escareno Castro, Juan Antonio	FEMTO-ST Inst.
Lozano, Rogelio	Univ. de Tech. de Compiegne
11:15-11:40	ThAT2.4
Data Communication in Linear Wireless Sensor Networks Using Unmanned Aerial Vehicles, pp. 492-499.	
Jawhar, Imad	UAEU
Mohamed, Nader	UAEU
Al-Jaroodi, Jameela	Middleware Tech. Lab.
Zhang, Sheng	State Key Lab. for Novel Software Tech. Nanjing Univ.
11:40-12:05	ThAT2.5
Basics and Guidelines of Complementary Filters for Small UAS Navigation, pp. 500-507.	
Jensen, Austin	Utah State Univ.
Coopmans, Cal	Utah State Univ.
Chen, YangQuan	Univ. of California, Merced
12:05-12:30	ThAT2.6
Altitude Estimation for the UAV's Applications Based on Sensors Fusion Algorithm, pp. 508-515.	
Szafranski, Grzegorz Jaroslaw	Silesian Univ. of Tech.
Czyba, Roman	Silesian Univ. of Tech.
Janusz, Wojciech	Silesian Univ. of Tech.
Blotnicki, Wojciech	Silesian Univ. of Tech.

ThAT3	Peachtree
UAS Fail-Safe Systems (Regular Session)	
Chair: Campoy, Pascual	Univ. Pol. Madrid
Co-Chair: Chao, Haiyang	West Virginia Univ.
10:00-10:25	ThAT3.1
A UKF-Based Estimation Strategy for Actuator Fault Detection of UASs, pp. 516-525.	
Yang, Xilin	Australian Res. Centre for Aerospace Automation and Queensla
Warren, Michael David	Queensland Univ. of Tech.
Arain, Bilal Ahmed	Queensland Univ. of Tech.
Upcroft, Ben	Queensland Univ. of Tech.
Gonzalez, Luis Felipe	Queensland Univ. of Tech. (QUT)/ Australian Res. C
Mejias Alvarez, Luis	Queensland Univ. of Tech.
10:25-10:50	ThAT3.2

Control Surface Fault Diagnosis with Specified Detection Probability - Real Event Experiences, pp. 526-531.

Hansen, Soren	Tech. Univ. of Denmark
Blanke, Mogens	DTU

10:50-11:15 ThAT3.3

UAS See-And-Avoid Strategy Using a Fuzzy Logic Controller Optimized by Cross-Entropy in Scaling Factors and Membership Functions, pp. 532-541.

Fu, Changhong	Pol. Univ. of Madrid
Olivares-Mendez, Miguel A.	Univ. Pol. de Madrid, Computer Vision Group
Campoy, Pascual	Univ. Pol. Madrid
Suárez Fernández, Ramón A.	Univ. Pol. de Madrid

11:15-11:40 ThAT3.4

Reachability Analysis of Landing Sites for Forced Landing of a UAS, pp. 542-549.

Coombes, Matthew	Loughborough Univ.
Chen, Wen-Hua	Loughborough Univ.

11:40-12:05 ThAT3.5

Robust Fault Estimation on a Real Quadrotor UAV Using Optimized Adaptive Thau Observer, pp. 550-556.

Cen, Zhao-hui	UAE Univ.
Noura, Hassan	United Arab Emirates Univ.
Al Younes, Younes	Higher Coll. of Tech.

ThAT4 Veranda

UAS Control Architectures (Regular Session)

Chair: Ollero, Anibal	Univ. de Sevilla
Co-Chair: Coopmans, Cal	Utah State Univ.

10:00-10:25 ThAT4.1

A General Purpose Configurable Navigation Controller for Micro Aerial Multirotor Vehicles, pp. 557-564.

Pestana Puerta, Jesus	Computer Vision Group, Centre for Automation and Robotics, CSIC-
Mellado-Bataller, Ignacio	Pol. Univ. of Madrid
Sanchez-Lopez, Jose Luis	CSIC - Univ. Pol. de Madrid, Centro de Automatica y
Fu, Changhong	Pol. Univ. of Madrid
Mondragón B., Iván F.	Pontificia Univ. Javeriana
Campoy, Pascual	Univ. Pol. Madrid

10:25-10:50 ThAT4.2

Decentralized Strategy to Ensure Information Propagation in Area Monitoring Missions with a Team of UAVs under Limited Communications (I), pp. 565-574.

Acevedo, José Joaquín	Univ. de Sevilla
Arrue, B.C.	Escuela Superior de Ingenieros, Univ. de Sevilla
Díaz-Báñez, José-Miguel	Univ. of Seville
Ventura, Inmaculada	Dpto. Matemática Aplicada II. Univ. de Sevilla.
Maza, Ivan	Univ. de Sevilla
Ollero, Anibal	Univ. de Sevilla

10:50-11:15 ThAT4.3

Framework for Autonomous Onboard Navigation with the AR.Drone, pp. 575-583.

Jimenez, Jacobo	Univ. of Tübingen
Zell, Andreas	Univ. of Tübingen

11:15-11:40 ThAT4.4

Event-Triggered Nonlinear Control for Attitude Stabilization of a Quadrotor, pp. 584-591.

Guerrero Castellanos, Jose Fermi	Autonomous Univ. of Puebla (BUAP),
Téllez Guzmán, José Juan	Autonomous Univ. of Puebla (BUAP)
Durand, Sylvain	CNRS - CINVESTAV
Marchand, Nicolas	CNRS-Gipsa-Lab.
Alvarez Muñoz, Jonatan Uziel	Autonomous Univ. of Puebla (BUAP)

11:40-12:05 ThAT4.5

An Architecture for Automatic Tuning of the Navigation System of Unmanned Aerial Vehicles, pp. 592-598.

Catena, Antonino	Univ. di Catania
Melita, Carmelo Donato	Univ. degli Studi di Catania
Muscato, Giovanni	Univ. degli Studi di Catania

12:05-12:30 ThAT4.6

Analysis and Development of a Reliable Fixed Wing UAV Control System for Mission Profiles with Restricted GPS Availability, pp. 599-608.

Garcia Rivero, Manuel	FADA-CATEC
Muskardin, Tin	German Aerospace Center (DLR)
Viguria, Antidio	FADA-CATEC
Laiacker, Maximilian	DLR
Ollero, Anibal	Univ. de Sevilla
Kondak, Konstantin	DLR (German Aerospace Center)

ThBT1 Buckhead Ballroom

Advanced Controls in UAS II (Regular Session)

Chair: Quagliotti, Fulvia	Pol. di Torino
Co-Chair: Chen, YangQuan	Univ. of California, Merced

15:00-15:25 ThBT1.1

Fractional Order Controller for Pitch Loop Control of a VTOL UAV, pp. 609-614.

Han, Jinlu	Utah State Univ.
Di, Long	Univ. of Virginia
Coopmans, Cal	Utah State Univ.
Chen, YangQuan	Univ. of California, Merced

15:25-15:50 ThBT1.2

Real-Time Implementation of a Decoupled and Robust Velocity Controller for Quadrotors, pp. 615-620.

Liu, Hao	Tsinghua Univ.
Hou, Xiaolei	Australian National Univ.
Kim, Jonghyuk	The Australian National Univ.
Zhong, Yisheng	Tsinghua Univ.

15:50-16:15 ThBT1.3

Controller Design for Small Air Vehicles — an Overview and Comparison, pp. 621-627.

Cui, Yinan	Univ. of Louisville
Inanc, Tamer	Univ. of Louisville

16:15-16:40 ThBT1.4

State-Feedback Control of the SpaceHawk Earth-Based Lunar Hopper, pp. 628-633.

Dzaba, Anthony	Lehigh Univ.
Abraham, Andrew	Lehigh Univ.

16:40-17:05 ThBT1.5

A Static Feedback Stabilizer for the Longitudinal Dynamics of a Small Scale Helicopter Including the Rotor Dynamics with Stabilizer Bar, pp. 634-641.

Benítez-Morales, José Gerardo	Centro de Investigación y Estudios Avanzados
Rodriguez Cortes, Hugo	CINVESTAV-IPN
Castro-Linares, Rafael	CINVESTAV-IPN

17:05-17:30 ThBT1.6

Rate Control and Flight Stabilization for a Quadrotor System, pp. 642-649.

Jahn, Benjamin	TU Ilmenau
Barth, Alexander	TU Ilmenau
Wulff, Kai	Ilmenau Univ. of Tech.
Simon, Tobias	TU Ilmenau
Römisch, Jan	TU Ilmenau

17:30-17:55 ThBT1.7

Real-Time Altitude Robust Controller for a Quad-Rotor Aircraft Using Sliding-Mode Control Technique, pp. 650-659.

Gonzalez, Ivan	Cinvestav - IPN
Salazar, Sergio	UMI LAFMIA CINVESTAV
Lozano, Rogelio	Univ. de Tech. de Compiegne
Escareno Castro, Juan Antonio	FEMTO-ST Inst.

ThBT2 Piedmont

UAS Navigation (Regular Session)

Chair: Chao, Haiyang	West Virginia Univ.
Co-Chair: Romero, Hugo	CINVESTAV

15:00-15:25 ThBT2.1

A Novel Fast and Accurate Algorithm for Terrain Referenced UAV Localization, pp. 660-667.

Eroglu, Orhan	Center of Res. for Advanced Tech. of Informatics and
Yilmaz, Guray	Computer Engineering Department, Turkish Air Force Acad.

15:25-15:50 ThBT2.2

Optimization of Intelligent-Based Approach for Low-Cost INS/GPS Navigation System, pp. 668-677.

Abdel-Hafez, Mamoun	American Univ. of Sharjah

15:50-16:15 ThBT2.3

Visual Odometry for Autonomous Outdoor Flight of a Quadrotor UAV, pp. 678-684.

Romero, Hugo	ICBI - UAEH
Salazar, Sergio	UMI LAFMIA CINVESTAV
Santos, Omar	CINVESTAV - IPN
Lozano, Rogelio	Univ. de Tech. de Compiegne

16:15-16:40 ThBT2.4

A Cross-Platform Comparison of Visual Marker Based Approaches for Autonomous Flight of Quadrocopters, pp. 685-693.

Masselli, Andreas	Univ. of Tuebingen
Yang, Shaowu	Univ. of Tübingen
Wenzel, Karl Engelbert	Univ. of T¨ubingen
Zell, Andreas	Univ. of Tübingen

16:40-17:05 ThBT2.5

A Mono-Camera and Scanning Laser Range Finder Based UAV Indoor Navigation System, pp. 694-701.

Wang, Fei	National Univ. of Singapore
Cui, Jin Qiang	NUS
Phang, Swee King	National Univ. of Singapore
Chen, Ben M.	National Univ. of Singapore
Lee, Tong Heng	National Univ. of Singapore

17:05-17:30 ThBT2.6

Point Navigation Guidance for Small Unmanned Helicopter under Predicting Future Position, pp. 702-709.

Lee, Jangho	Korea Aerospace Res. Inst.
Chung, Jindeog	Korea Aerospace Res. Inst.

17:30-17:55 ThBT2.7

A Survey of Optical Flow Techniques for UAV Navigation Applications, pp. 710-716.

Chao, Haiyang	West Virginia Univ.
Gu, Yu	West Virginia Univ.
Napolitano, Marcello	West Virginia Univ.

ThBT3 Peachtree

Micro and Mini UAS (Regular Session)

Chair: Lozano, Rogelio	Univ. de Tech. de Compiegne
Co-Chair: Metge, Julien	Univ. Bordeaux, IMS, Fly-n-Sense

15:00-15:25 ThBT3.1

Fault Estimation for a Quad-Rotor MAV Using a Polynomial Observer, pp. 717-724.

Aguilar-Sierra, Hipolito	CINVESTAV-IPN
Flores Colunga, Gerardo Ramon	Univ. of Tech. of Compiègne
Salazar, Sergio	UMI LAFMIA CINVESTAV
Lozano, Rogelio	Univ. de Tech. de Compiegne

15:25-15:50 ThBT3.2

Dynamic Magnetic Field Compensation for Micro UAV Attitude Estimation, pp. 725-733.

Metge, Julien	Univ. Bordeaux, IMS, Fly-n-Sense
Megret, Rémi	Univ. Bordeaux, IMS
Giremus, Audrey	Univ. Bordeaux, IMS
Berthoumieu, Yannick	Univ. Bordeaux, IMS
Mazel, Christophe	Fly-n-Sense

15:50-16:15 ThBT3.3

Improvement of Power Efficiency in Flapping-Wing MAVs through a Semi-Passive Motion Control Approach, pp. 734-743.

Mahjoubi, Hosein	Univ. of California Santa Barbara
Byl, Katie	UC Santa Barbara

16:40-17:05 ThBT3.5

Micro Helicopter-Airplane System: Trajectory Tracking and Attitude Control, pp. 744-753.

Espinoza Quesada, Eduardo Steed	Univ. Pol. de Pachuca
Lugo-Cardenas, Israel	CINVESTAV
Garcia Salazar, Octavio	Aerospace Engineering Res. and Innovation Center (CIIIA) - U
Malo Tamayo, Alejandro Justo	Centro de Investigación y de Estudios Avanzados del IPN
Lozano, Rogelio	Univ. de Tech. de Compiegne

17:05-17:30 ThBT3.6

Fractional-Order Complementary Filters for Small Unmanned Aerial System Navigation, pp. 754-760.

Coopmans, Cal	Utah State Univ.
Jensen, Austin	Utah State Univ.
Chen, YangQuan	Univ. of California, Merced

17:30-17:55 ThBT3.7

Small Scale UAV with Birotor Configuration, pp. 761-768.

Gonçalves, Fernando Silvano	Federal Univ. of Santa Catarina
Bodanese, João Paulo	Federal Univ. of Santa Catarina
Donadel, Rodrigo	Federal Univ. of Santa Catarina
Raffo, Guilherme Vianna	Univ. of Seville
Normey-Rico, Julio Elias	Federal Univ. of Santa Catarina
Buss Becker, Leandro	Federal Univ. of Santa Catarina
Silva, Natassya Barlate Floro	Univ. of São Paulo, ICMC-USP
Branco, Kalinka Regina Lucas Jaquie Castelo Branco	Univ. of São Paulo

ThBT4 Veranda

Advances in Rotary-Wing UAS (Regular Session)

Chair: Lozano, Rogelio	Univ. de Tech. de Compiegne
Co-Chair: Schauwecker, Konstantin	Univ. of Tuebingen

15:00-15:25 ThBT4.1

An Autonomous Shipboard Landing Algorithm for Unmanned Helicopters, pp. 769-778.

Shin, HeeMin	Korea Advanced Inst. of Science and Tech.
You, Dong-Il	Korea Advanced Inst. of Science and Tech.
Shim, David Hyunchul	Korea Advanced Inst. of Science and Tech.

15:25-15:50 ThBT4.2

Toward Visual Autonomous Ship Board Landing of a VTOL UAV, pp. 779-788.

Sanchez-Lopez, Jose Luis	Univ. Pol. de Madrid, Centro de Automatica y Roboti
Saripalli, Srikanth	Arizona State Univ.
Campoy, Pascual	Univ. Pol. Madrid
Pestana Puerta, Jesus	Computer Vision Group, Centre for Automation and Robotics, CSIC-
Fu, Changhong	Pol. Univ. of Madrid

15:50-16:15 ThBT4.3

Transition Flight Control of the Quad-Tilting Rotor Convertible MAV, pp. 789-794.

Flores Colunga, Gerardo Ramon	Univ. of Tech. of Compiègne
Lozano, Rogelio	Univ. de Tech. de Compiegne
Romero, Hugo	ICBI - UAEH

16:15-16:40 ThBT4.4

Observer-Control Scheme for Autonomous Navigation: Flight Tests Validation in a Quadrotor Vehicle, pp. 795-804.

Munoz Hernandez, Laura Elena	Univ. de Tech. de Compiègne, Heudiasyc Lab.
Castillo, Pedro	Univ. De Tech. De Compiegne
Garcia Gil, Pedro José	Univ. Pol. de Valencia

16:40-17:05 ThBT4.5

An Impedance Force Control Approach to a Quad-Rotor System, pp. 805-810.

Jung, Seul	Chungnam National Univ.

17:30-17:55 ThBT4.7

A New Concept of VTOL As Fixed-Wing, pp. 811-817.

Technical Program for Friday May 31, 2013

FrAT1	Buckhead Ballroom
Cooperative Control Designs for Multiple Aerial Vehicles (Invited Session)	
Chair: Zhang, Youmin	Concordia Univ.
Co-Chair: Tsourdos, Antonios	Cranfield Univ.
Organizer: Zhang, Youmin	Concordia Univ.
Organizer: Zhou, Donghua	Tsinghua Univ.
Organizer: Jiang, Bin	NUAA
10:00-10:25	FrAT1.1
Cooperative Localization Based on the Azimuth Angles among Multiple UAVs (I), pp. 818-823.	
Qu, Yaohong	Northwestern Ploytechnical Univ.
Wu, Jizhi	Northwestern Ploytechnical Univ.
Zhang, Youmin	Concordia Univ.
10:25-10:50	FrAT1.2
Constrained Formation Protocols for Networked Multiagent Systems (I), pp. 824-830.	
De La Torre, Gerardo	Georgia Inst. of Tech.
Yucelen, Tansel	UAV Res. Facility, School of Aerospace Engineering, Georgia
Johnson, Eric N.	Georgia Inst. of Tech.
10:50-11:15	FrAT1.3
Navigation, Localization and Stabilization of Formations of Unmanned Aerial and Ground Vehicles, pp. 831-840.	
Saska, Martin	Czech Tech. Univ. in Prague
Krajnik, Tomas	Faculty of Electrical Engineering, Czech Tech. Univ.
Vonasek, Vojtech	Czech Tech. Univ. in Prague, Faculty of electrical engi
Vaněk, Petr	Czech Tech. Univ. in Prague
Preucil, Libor	Czech Tech. Univ.
11:15-11:40	FrAT1.4
Consensus Control for a Class of Second-Order Multi-Agent Systems: An Iterative Learning Approach (I), pp. 841-849.	
Shi, Jiantao	Tsinghua Univ.
He, Xiao	Tsinghua Univ.
Wang, Zidong	Brunel Univ.
Zhou, Donghua	Tsinghua Univ.
11:40-12:05	FrAT1.5
A Solution for the Goal Position Assignment in Formation Problem, pp. 850-858.	
Garcia Delgado, Luis Arturo	Univ. de Sonora
Gomez, Roberto	Univ. de Sonora
Garcia, Alejandro	Univ. de Sonora
Leal, Ana	Univ. de Sonora
Berman, Dainet	Univ. de Sonora
Vera, Alicia	Univ. de Sonora
Rojas, Armando	Univ. de Sonora
12:05-12:30	FrAT1.6
Multi-Vehicle Circular Formation Flight in an Unknown Time-Varying Flow-Field (I), pp. 859-868.	
Sadraey, Mohammad	Daniel Webster Coll.

FrAT2	Piedmont
Model Identification of UAS (Regular Session)	
Chair: Castillo, Pedro	Univ. De Tech. De Compiegne
Co-Chair: Pack, Daniel	Univ. of Texas in San Antonio
10:00-10:25	FrAT2.1
Wind Estimation for Accurate Airplane Path Following Applications, pp. 869-874.	
Brezoescu, Alexandru Cornel	Univ. of Tech. of Compiegne
Castillo, Pedro	Univ. De Tech. De Compiegne
Lozano, Rogelio	Univ. de Tech. de Compiegne
10:25-10:50	FrAT2.2
Parameter Estimation Based Control of Hypersonic Aircraft with Magnitude Constraints on States and Actuators, pp. 875-880.	
Xu, Bin	Northwestern Pol. Univ.
Wang, Shixing	Tsinghua Univ.
Gao, DaoXiang	Beijing Forestry Univ.
10:50-11:15	FrAT2.3
Identification of Directional Runway Dynamics for an Experimental UAV, pp. 881-889.	
Drago, Igor do Nascimento	Flight Tech.
Maciel, Benedito	Flight Tech. S/A
Hemerly, Elder	Inst. Tecnologico De Aeronautica
Andrade de Almeida, Fabio	Inst. de Aeronáutica e Espaço
11:15-11:40	FrAT2.4
Physical Input Modelling and Identification for a Helicopter UAV, pp. 890-896.	
Godbolt, Bryan	Univ. of Alberta
Lynch, Alan	U Alberta
11:40-12:05	FrAT2.5
Small Low Cost Unmanned Aerial Vehicle System Identification: A Survey and Catagorization, pp. 897-904.	
Hoffer, Nathan	Center for Self-Organizing Systems (CSOIS), Utah State Univ.
Coopmans, Cal	Utah State Univ.
Jensen, Austin	Utah State Univ.
Chen, YangQuan	Univ. of California, Merced
12:05-12:30	FrAT2.6
Estimating Vehicle State by Gps/imu Fusion with Vehicle Dynamics, pp. 905-914.	
Abdel-Hafez, Mamoun	American Univ. of Sharjah

FrAT3	Peachtree
Multivehicle Cooperation, Health Management and Persistent Operations (Invited Session)	
Chair: Morrison, James R.	KAIST
Co-Chair: Stark, Brandon	Univ. of California, Merced
Organizer: Morrison, James R.	KAIST
10:00-10:25	FrAT3.1
Persistent UAV Service: An Improved Scheduling Formulation and Prototypes of System Components (I), pp. 915-925.	
Song, Byung Duk	KAIST, Department of Industrial and Systems Engineering
Kim, Jonghoe	KAIST, Department of Industrial and Systems Engineering
Kim, Jeongwoon	KAIST
Park, Hyorin	KAIST, Department of Industrial and Systems Engineering

Morrison, James R.	KAIST
Shim, David Hyunchul	Korea Advanced Inst. of Science and Tech.

10:25-10:50 FrAT3.2

Modeling Multiple Unmanned Aerial Vehicles Placement Problem in Ad Hoc Network Via Quadratic Unconstrained Binary Optimization (I), pp. 926-932.

Wang, Haibo	Texas A&M International Univ.
Wang, Wei	Texas A&M International Univ.
Huang, Jun	Texas A&M International Univ.
Xu, Yaquan	Texas A&M International Univ.
Huo, Da	Central Univ. of Finance and Ec. Beijing

10:50-11:15 FrAT3.3

Mobile Networking with UAVs: Opportunities and Challenges, pp. 933-941.

Sahingoz, Ozgur Koray	Turkish Air Force Acad.

11:15-11:40 FrAT3.4

On the Concerted Design and Scheduling of Multiple Resources for Persistent UAV Operations (I), pp. 942-951.

Kim, Jonghoe	KAIST, Department of Industrial and Systems Engineering
Morrison, James R.	KAIST

11:40-12:05 FrAT3.5

Persistent Visitation under Revisit Constraints (I), pp. 952-957.

Las Fargeas, Jonathan	Univ. of Michigan
Hyun, Baro	Univ. of Michigan
Kabamba, Pierre T.	Univ. of Michigan
Girard, Anouck	Univ. of Michigan at Ann Arbor

FrAT4 Veranda

Aerial Manipulation (Regular Session)

Chair: Danko, Todd	Drexel Univ.
Co-Chair: Lozano, Rogelio	Univ. de Tech. de Compiegne

10:00-10:25 FrAT4.1

Trajectory Control of a Class of Articulated Aerial Robots, pp. 958-965.

Kobilarov, Marin	Johns Hopkins Univ.

10:25-10:50 FrAT4.2

Lyapunov Based Model Reference Adaptive Control for Aerial Manipulation, pp. 966-973.

Orsag, Matko	Univ. of Zagreb
Korpela, Christopher	Drexel Univ.
Bogdan, Stjepan	Univ. of Zagreb
Oh, Paul	Drexel Univ.

10:50-11:15 FrAT4.3

A Hyper-Redundant Manipulator for Mobile Manipulating Unmanned Aerial Vehicles, pp. 974-981.

Danko, Todd	Drexel Univ.
Oh, Paul	Drexel Univ.

11:15-11:40 FrAT4.4

A Hardware-In-The-Loop Test Rig for Aerial Manipulation, pp. 982-987.

Korpela, Christopher	Drexel Univ.
Orsag, Matko	Univ. of Zagreb, Faculty of Electrical Engineering andCompu
Jun, Youngbum	Drexel Univ.
Brahmbhatt, Pareshkumar	Drexel Univ.
Oh, Paul	Drexel Univ.

FrBT1 Buckhead Ballroom

UAS Control Related Challenges (Regular Session)

Chair: Lozano, Rogelio	Univ. de Tech. de Compiegne
Co-Chair: Chao, Haiyang	West Virginia Univ.

15:00-15:25 FrBT1.1

Neural Control for Longitudinal Dynamics of Hypersonic Aircraft, pp. 988-993.

Xu, Bin	Northwestern Pol. Univ.
Shi, Zhongke	Northwestern Pol. Univ.
Wang, Danwei	Nanyang Tech. Univ.
Wang, Han	Nanyang Tech. Univ.
Zhu, Senqiang	Nanyang Tech. Univ.

15:25-15:50 FrBT1.2

Guidelines for Integration of Autonomous UAS in Global ATM, pp. 994-1003.

Gimenes, Ricardo	Univ. of Sao Paulo
Correa, Mario A.	Univ. of Sao Paulo
Camargo Jr, João Batista	Univ. of Sao Paulo
Avelino, Valter F.	Univ. of Sao Paulo
Vismari, Lucio F.	Univ. of Sao Paulo
Cugnasca, Paulo Sérgio	Univ. of Sao Paulo
Rossi, Magali A.	Univ. of Sao Paulo
Almeida Jr, Jorge Rady	Univ. of Sao Paulo

15:50-16:15 FrBT1.3

Adaptive Super Twisting Flight Control-Observer for a Fixed-Wing UAV, pp. 1004-1013.

Castaneda, Herman	Univ. Autonoma de Nuevo Leon
Salas, Oscar	Univ. Autonoma de Nuevo Leon
De Leon, Jesus	Univ. Autonoma de Nuevo Leon

16:40-17:05 FrBT1.5

A Nonlinear Path-Following Strategy for a Fixed-Wing MAV, pp. 1014-1021.

Flores Colunga, Gerardo Ramon	Univ. of Tech. of Compiègne
Lugo-Cardenas, Israel	CINVESTAV
Lozano, Rogelio	Univ. de Tech. de Compiegne

17:05-17:30 FrBT1.6

Bank to Turn Approach for Airplane Translational Motion in Unknown Wind, pp. 1022-1029.

Brezoescu, Alexandru Cornel	Univ. of Tech. of Compiegne
Lozano, Rogelio	Univ. de Tech. de Compiegne
Castillo, Pedro	Univ. De Tech. De Compiegne

FrBT2 Piedmont

UAS Modeling and Control (Regular Session)

Chair: Restas, Agoston	National Univ. of Public Service
Co-Chair: Claudel, Christian	KAUST

15:00-15:25 FrBT2.1

Some Aspect of Human Features of the Use of Unmanned Aerial Systems in a Disaster-Specific Division, pp. 1030-1036.

Restas, Agoston	National Univ. of Public Service

Dudas, Zoltan	National Univ. of Public Service

15:25-15:50 FrBT2.2

Adaptive Neural Control Design for Hypersonic Aircraft Using Time Scale Separation, pp. 1037-1042.

Gao, DaoXiang	Beijing Forestry Univ.
Wang, Shixing	Department of Computer Science and Tech. Tsinghua Univ.
Lu, Dumin	Beijing Forestry Univ.

15:50-16:15 FrBT2.3

Mathematical Modeling and Control of a Hexacopter, pp. 1043-1050.

Alaimo, Andrea	Univ. of Enna Kore
Artale, Valeria	Univ. of Enna Kore
Milazzo, Cristina	Univ. of Enna Kore
Ricciardello, Angela	Univ. of Enna Kore
Trefiletti, Luca	Univ. of Enna Kore

16:15-16:40 FrBT2.4

Middleware Requirements for Collaborative Unmanned Aerial Vehicles, pp. 1051-1060.

Mohamed, Nader	UAEU
Al-Jaroodi, Jameela	Middleware Tech. Lab.
Jawhar, Imad	UAEU
Lazarova-Molnar, Sanja	UAEU

16:40-17:05 FrBT2.5

Observer-Based Adaptive Super Twisting Control Strategy for a 2-DOF Helicopter, pp. 1061-1070.

Salas, Oscar	Univ. Autonoma de Nuevo Leon
Castaneda, Herman	Univ. Autonoma de Nuevo Leon
De Leon, Jesus	Univ. Autonoma de Nuevo Leon

17:05-17:30 FrBT2.6

Modeling and Control of a Novel Tilt – Roll Rotor Quadrotor UAV, pp. 1071-1076.

Senkul, Fatih	Istanbul Tech. Univ.
Altug, Erdinc	Istanbul Tech. Univ.

17:30-17:55 FrBT2.7

Platform Design and Mathematical Modeling of an Ultralight Quadrotor Micro Aerial Vehicle, pp. 1077-1086.

Li, Kun	National Univ. of Singapore
Phang, Swee King	National Univ. of Singapore
Chen, Ben M.	National Univ. of Singapore
Lee, Tong Heng	National Univ. of Singapore

FrBT3 Peachtree

Fault-Tolerant Designs for Multiple Aerial Vehicles (Invited Session)

Chair: Zhang, Youmin	Concordia Univ.
Co-Chair: Stark, Brandon	Univ. of California, Merced
Organizer: Zhang, Youmin	Concordia Univ.
Organizer: Zhou, Donghua	Tsinghua Univ.
Organizer: Jiang, Bin	NUAA

15:00-15:25 FrBT3.1

A Survey on Multiple Unmanned Vehicles Formation Control and Coordination: Normal and Fault Situations (I), pp. 1087-1096.

Zhang, Youmin	Concordia Univ.
Mehrjerdi, Hasan	Quebec Univ.

15:25-15:50 FrBT3.2

Adaptive Fault-Tolerant Control Design for UAVs Formation Flight under Actuator Faults (I), pp. 1097-1105.

Xu, Qing	Nanjing Univ. of Aeronautics and Astronautics
Yang, Hao	Nanjing Univ. of Aeronautics and Astronautics
Jiang, Bin	NUAA
Zhou, Donghua	Tsinghua Univ.
Zhang, Youmin	Concordia Univ.

15:50-16:15 FrBT3.3

Fault Tolerant Formation Flight Control Using Different Adaptation Techniques (I), pp. 1106-1113.

Tancredi, Daniele	MathWorks
Gu, Yu	West Virginia Univ.
Chao, Haiyang	West Virginia Univ.

16:15-16:40 FrBT3.4

A Literature Review on Fault Diagnosis Methods for Manned and Unmanned Helicopters (I), pp. 1114-1118.

Qi, Xin	Univ. of Chinese Acad. of Sciences
Theilliol, Didier	Univ. of Lorraine
Qi, Juntong	Shenyang Inst. of Automation, CAS
Zhang, Youmin	Concordia Univ.
Han, Jianda	Shenyang Inst. of Automation

17:05-17:30 FrBT3.6

Coverage Control in Multi-Vehicle Systems Subject to Health Degradation (I), pp. 1119-1124.

Sharifi, Farid	Concordia Univ.
Zhang, Youmin	Concordia Univ.
Aghdam, Amir G.	Concordia Univ.

17:30-17:55 FrBT3.7

Decentralized Learning Based Planning for Multiagent Missions in Presence of Actuator Failures (I), pp. 1125-1134.

Ure, Nazim Kemal	Massachusetts Inst. of Tech.
Chowdhary, Girish	Massachusetts Inst. of Tech.
Chen, Yu Fan	Massachusetts Inst. of Tech.
Cutler, Mark	Massachusetts Inst. of Tech.
How, Jonathan P.	Massachusetts Inst. of Tech.
Vian, John	Boeing Res. and Tech.

FrBT4 Veranda

Vision & Sensing for Localization of UAVs and Their Targets (Invited Session)

Chair: Morrison, James R.	KAIST
Co-Chair: Lozano, Rogelio	Univ. de Tech. de Compiegne
Organizer: Morrison, James R.	KAIST

15:00-15:25 FrBT4.1

Stability Analysis of a Vision-Based UAV Controller for Autonomous Road Following Missions (I), pp. 1135-1143.

Ramirez, Adrian	CINVESTAV
Espinoza Quesada, Eduardo Steed	Univ. Pol. de Pachuca
Garcia Carrillo, Luis Rodolfo	Univ. of California, Santa Barbara
Mondie, Sabine	CINVESTAV-IPN
Lozano, Rogelio	Univ. de Tech. de Compiegne

15:25-15:50 FrBT4.2

Tracking Tagged Fish with Swarming Unmanned Aerial Vehicles

Using Fractional Order Potential Fields and Kalman Filtering, pp. 1144-1149.

Jensen, Austin	Utah State Univ.
Chen, YangQuan	Univ. of California, Merced

15:50-16:15 FrBT4.3

A Vision and GPS-Based Real-Time Trajectory Planning for MAV in Unknown Urban Environments (I), pp. 1150-1155.

Flores Colunga, Gerardo Ramon	Univ. of Tech. of Compiègne
Zhou, Shuting	Univ. of Tech. of Compiegne
Lozano, Rogelio	Univ. de Tech. de Compiegne
Castillo, Pedro	Univ. De Tech. De Compiegne

16:40-17:05 FrBT4.5

Lightweight Infrared Sensing for Relative Navigation of Quadrotors (I), pp. 1156-1164.

Cutler, Mark	Massachusetts Inst. of Tech.
Michini, Buddy	MIT
How, Jonathan P.	Massachusetts Inst. of Tech.

17:05-17:30 FrBT4.6

A Vision-Based Target Tracking Control System of a Quadrotor by Using a Tablet Computer (I), pp. 1165-1172.

Kim, Jeongwoon	KAIST
Shim, David Hyunchul	Korea Advanced Inst. of Science and Tech.