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Pages 1-690



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ICUAS'15 CONTENT LIST

Technical Program for Wednesday June 10, 2015

WeATT1	Room Evergreen A-B
Autonomy - I (Regular Session)	
Chair: Eaton, William	Loughborough Univ
Co-Chair: Ma, Yue	Beijing Inst. of Tech

11:00-11:20 WeATT1.1

Image Segmentation for Automated Taxiing of Unmanned Aircraft, pp. 1-8.

Eaton, William Loughborough Univ
Chen, Wen-Hua Loughborough Univ

11:20-11:40 WeATT1.2

Flexible Multi-Agent Algorithm for Distributed Decision Making, pp. 9-17.

Gruber, Scott United States Air Force Acad
Streeter, Robert Acad. Center for Unmanned Aircraft Systems Res
York, George Acad. Center for Unmanned Aircraft Systems Res

11:40-12:00 WeATT1.3

Formation Control of Quad-Rotor UAVs Using a Single Camera, pp. 18-25.

Nielsen, Jerel Utah State Univ
Sharma, Rajnikant Utah State Univ

12:00-12:20 WeATT1.4

Augmenting the Helicopter-Ship Dynamic Interface Using an Autonomous Safe-Landing Prediction Scheme, pp. 26-33.

Fourie, Christopher Kurt Stellenbosch Univ
Jones, Thomas Stellenbosch Univ

12:20-12:40 WeATT1.5

Adaptive Sliding Mode Control Design for Quadrotor Unmanned Aerial Vehicle, pp. 34-39.

Islam, Shafiqul Univ. of Ottawa
Sheikh, Muhammad Faraz Khalifa Univ. of Science Tech. and Res
Ashour, Reem Khalifa Univ. of Science Tech. and Res
Cai, Guowei Khalifa Univ
Dias, Jorge Khalifa Univ
Seneviratne, Lakmal Kings Coll. London

WeATT2 Room Evergreen C
Path Planning - I (Regular Session)

Chair: Xu, Bin Beijing Inst. of Tech
Co-Chair: Heredia, Guillermo Univ. of Seville

11:00-11:20 WeATT2.1

Trajectory Planning for Autonomous Nonholonomic Vehicles for Optimal Monitoring of Spatial Phenomena, pp. 40-49.

Song, Sisi Univ. of California, Santa Cruz
Rodriguez, Abel Univ. of California, Santa Cruz

Teodorescu, Mircea Univ. of California, Santa Cruz

11:20-11:40 WeATT2.2

Optimal Path Planning for UAVs Using Genetic Algorithm, pp. 50-55.

Sonmez, Abdurrahim Turkish Air Force Acad
Kocyigit, Emre Turkish Air Force Acad
Kugu, Emin Turkish Air Force Acad

11:40-12:00 WeATT2.3

2D Path Planning for UAVs in Radar Threatening Environment Using Simulated Annealing Algorithm, pp. 56-61.

Turker, Tolgahan Aeronautics and Space Tech. Inst. Turkish Air Force
Sahingoz, Ozgur Koray Turkish Air Force Acad
Yilmaz, Guray Computer Engineering Department, Turkish Air Force Acad

12:00-12:20 WeATT2.4

Reachability Analysis of Landing Sites for Forced Landing of a UAS in Wind Using Trochoidal Turn Paths, pp. 62-71.

Coombes, Matthew Loughborough Univ
Chen, Wen-Hua Loughborough Univ
Render, Peter Loughborough Univ

12:20-12:40 WeATT2.5

Collision-Free Trajectory Planning Based on Maneuver Selection-Particle Swarm Optimization, pp. 72-81.

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

WeATT3 Room Conifer Ballroom
Energy Efficient UAS (Regular Session)

Chair: Darrach, Marjorie West Virginia Univ
Co-Chair: Wong, Tze Lin Singapore Pol

11:00-11:20 WeATT3.1

Design and Control of a Gas-Electric Hybrid Quad Tilt-Rotor UAV with Morphing Wing, pp. 82-91.

Cetinsoy, Ertugrul Istanbul Commerce Univ

11:20-11:40 WeATT3.2

Implementing Path Planning and Guidance Layers for Dynamic Soaring and Persistence Missions, pp. 92-101.

Silva, William Univ. of Colorado Boulder
Frew, Eric W. Univ. of Colorado, Boulder
Shaw-Cortez, Wenceslao Univ. of Colorado Boulder

11:40-12:00 WeATT3.3

Solar Irradiation Estimation on a Solar Powered Uav Over a Mission Course, pp. 102-108.

Ozcan, Guclu ASELSAN Inc.
Alemdaroglu, Nafiz Middle East Tech. Univ

12:00-12:20 WeATT3.4

A Vision-Based Flight Guidance and Navigation System for Autonomous Cross-Country Soaring UAVs, pp. 109-117.

Stolle, Martin	Office National D'etudes Et De Recherches Aérospatiales (ONERA)
Bolting, Jan	ISAE
Watanabe, Yoko	Office National D'etudes Et De Recherches Aérospatiales (ONERA),
Döll, Carsten	Onera

12:20-12:40 WeATT3.5

Autonomous Battery Swapping System for Quadcopter, pp. 118-124.

Lee, Danny	Singapore Pol
Zhou, Joe	Singapore Pol
Wong, Tze Lin	Singapore Pol

WeATT4 Room Aspen Amphitheater
Control Architecture - 1 (Regular Session)

Chair: Fossen, Thor I.	Norwegian Univ. of Sci. and Tech
Co-Chair: Xu, Hao	Texas A&M Univ. Christi

11:00-11:20 WeATT4.1

Simultaneously Multi-UAV Mapping and Control with Visual Servoing, pp. 125-131.

Lyu, Yang	Northwestern Pol. Univ
PAN, Quan	Northwestern Pol. Univ
Zhao, Chunhui	Northwestern Pol. Univ
Zhang, Yizhai	Northwestern Pol. Univ
Haifeng, Zhu	Northwestern Pol. Univ
Tang, Tongguo	Northwestern Pol. Univ
Liu, Liu	Northwestern Pol. Univ

11:20-11:40 WeATT4.2

A Trajectory-Tracking Controller Design Using L1 Adaptive Control for Multi-Rotor UAVs, pp. 132-138.

Jung, Yeondeuk	KARI(Korea Aerospace Res. Inst
Cho, Sungwook	Korea Advanced Inst. of Science and Tech
Shim, David Hyunchul	Korea Advanced Inst. of Science and Tech

11:40-12:00 WeATT4.3

An Open-Source Architecture for Control and Coordination of a Swarm of Micro-Quadrotors, pp. 139-146.

Furci, Michele	DEI - Univ. of Bologna
Casadei, Giacomo	DEI - Univ. of Bologna
Naldi, Roberto	Univ. Di Bologna
Sanfelice, Ricardo G.	Univ. of Arizona
Marconi, Lorenzo	Univ. Di Bologna

12:00-12:20 WeATT4.4

A Rational Agent Framework for Adaptive Flight Control of UAV, pp. 147-156.

Tantrairatn, Suradet	Univ. of Sheffield
Veres, Sandor	Univ. of Sheffield

12:20-12:40 WeATT4.5

Nonlinear Observer for INS Aided by Time-Delayed GNSS Measurements: Implementation and UAV Experiments, pp. 157-166.

Hansen, Jakob Mahler	Norwegian Univ. of Science and
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Fossen, Thor I.	Norwegian Univ. of Sci. and Tech
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech

WeBTT1 Room Evergreen A-B
Autonomy - II (Regular Session)

Chair: Kalyanam, Krishnamoorthy	AFRL
Co-Chair: Fasano, Giancarmine	Univ. of Naples "Federico II"

15:00-15:20 WeBTT1.1

Fuzzy Logic Guidance of Formation Flight, pp. 167-175.

Tekinalp, Ozan	Middle East Tech. Univ
Kumbasar, Sarper	Middle East Tech. Univ

15:20-15:40 WeBTT1.2

Nonlinear Control of a Multirotor UAV with Suspended Load, pp. 176-184.

Klausen, Kristian	Norwegian Univ. of Sci. and Tech
Fossen, Thor I.	Norwegian Univ. of Sci. and Tech
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech

15:40-16:00 WeBTT1.3

RGB-D Camera-Based Quadrotor Navigation in GPS-Denied and Low Light Environments Using Known 3D Markers, pp. 185-192.

Vetrella, Amedeo Rodi	Univ. of Naples "Federico II"
Savvaris, Al	Cranfield Univ
Fasano, Giancarmine	Univ. of Naples "Federico II"
Accardo, Domenico	Univ. of Naples "Federico II"

16:00-16:20 WeBTT1.4

Towards Collision Avoidance for Commodity Hardware Quadcopters with Ultrasound Localization, pp. 193-203.

Vedder, Benjamin	SP Tech. Res. Inst. of Sweden
Eriksson, Henrik	SP Tech. Res. Inst. of Sweden
Skarin, Daniel	SP Tech. Res. Inst. of Sweden
Vinter, Jonny	SP Tech. Res. Inst. of Sweden
Jonsson, Magnus	Halmstad Univ

16:20-16:40 WeBTT1.5

Minimum Time UAV Pursuit of a Moving Ground Target Using Partial Information, pp. 204-208.

Kalyanam, Krishnamoorthy	AFRL
Casbeer, David	Air Force Res. Lab
Pachter, Meir	AFIT/ENG

WeBTT2 Room Evergreen C
Path Planning - II (Regular Session)

Chair: Saripalli, Srikanth	Arizona State Univ
Co-Chair: Baek, Hoki	Ajou Univ

15:00-15:20 WeBTT2.1

Integral Backstepping Control for Trajectory Tracking of a Hybrid Vehicle, pp. 209-217.

Colmenares Yazquez, Josue	Gipsa Lab Cnrs
Marchand, Nicolas	GIPSA-Lab CNRS
Castillo, Pedro	Unviersité De Tech. De Compiègne
GOMEZ-BALDERAS, Jose-Ernesto	Gipsa-Lab

Alvarez Muñoz, Jonatan Uziel Univ. De Grenoble, GIPSA-Lab
Télez Guzmán, José Juan Univ. Grenoble Alpes, GIPSA-Lab

15:20-15:40 WeBTT2.2

Guidance of Multi-Agent Fixed-Wing Aircraft Using Moving Mesh Methods, pp. 218-225.

Kim, A Ram Univ. of Kansas
Keshmiri, Shawn Univ. of Kansas
Huang, Weizhang Univ. of Kansas
Garcia, Gonzalo Univ. of Kansas

15:40-16:00 WeBTT2.3

Collision Avoidance for UAVs Using Reachable Sets, pp. 226-235.

Lin, Yucong Arizona State Univ
Saripalli, Srikanth Arizona State Univ

16:00-16:20 WeBTT2.4

Trajectory Optimization for Constrained UAVs: A Virtual Target Vehicle Approach, pp. 236-245.

Rucco, Alessandro Faculty of Engineering, Univ. of Porto
Aguiar, A. Pedro Faculty of Engineering, Univ. of Porto (FEUP)
Hauser, John Univ. of Colorado at Boulder

16:20-16:40 WeBTT2.5

Terrain-Based Landing Site Selection and Path Planning for UAVs, pp. 246-251.

Garg, Mayank IIIT Delhi
Kumar, Abhishek IIIT Delhi
P. B, Sujit Indraprastha Inst. of Information Tech. Delhi

WeBTT3 Room Conifer Ballroom
Airworthiness and Certification (Regular Session)

Chair: Chen, YangQuan Univ. of California, Merced
Co-Chair: Neogi, Natasha NASA Langley Res. Center

15:00-15:20 WeBTT3.1

Airworthiness and Protocol Development for Safe Night Flying Missions for Small Unmanned Aerial Systems (sUASs), pp. 252-259.

Stark, Brandon Univ. of California, Merced
Smith, Brendan Univ. of California, Merced
Navarrete, Nathaly Univ. of California, Merced
Chen, YangQuan Univ. of California, Merced

15:20-15:40 WeBTT3.2

A Case Study for Assured Containment, pp. 260-269.

Hayhurst, Kelly NASA Langley Res. Center
Maddalon, Jeffrey NASA Langley Res. Center
Neogi, Natasha NASA Langley Res. Center
Verstynen, Harry Whirlwind Engineering, LLC

15:40-16:00 WeBTT3.3

Certification Considerations for Adaptive Systems, pp. 270-279.

Bhattacharyya, Siddhartha Rockwell Coll
Cofer, Darren Rockwell Coll
Musliner, David Smart Information Flow Tech
Mueller, Joseph Smart Information Flow Tech
Engstrom, Eric Smart Information Flow Tech. (SIFT)

16:00-16:20 WeBTT3.4

Liability in UAV / UAS Operations. pp. 1341-1346

Straub, Jeremy Univ. of North Dakota
Vacek, Joseph Univ. of North Dakota

16:20-16:40 WeBTT3.5

Effects of Control Surface Location on Control Authority of Low-Aspect-Ratio Wings in Low Reynolds Number Flight Conditions[†].

O'Donnell, Richard Univ. of Florida
Mohseni, Kamran Univ. of Florida
(WITHDRAWN)

WeBTT4 Room Aspen Amphitheater
Control Architecture - II (Regular Session)

Chair: Lynch, Alan U Alberta
Co-Chair: Nahon, Meyer McGill Univ

15:00-15:20 WeBTT4.1

A Total Energy Control System Strategy for the Quadrotor Helicopter, pp. 280-287.

Vasquez-Beltran, Marco CINVESTAV-IPN
Augusto
Rodriguez Cortes, Hugo CINVESTAV-IPN

15:20-15:40 WeBTT4.2

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Cao, Ning Univ. of Alberta
Lynch, Alan U Alberta

15:40-16:00 WeBTT4.3

Outdoor Waypoint Navigation with the AR.Drone Quadrotor, pp. 297-305.

Santana, Lucas Vago Federal Inst. of Education, Science and Tech. of Espiri
Brandao, Alexandre Santos Federal Univ. of Vicosa
Sarcinelli-Filho, Mário Federal Univ. of Espirito Santo

16:00-16:20 WeBTT4.4

UAV Obstacle Avoidance Using RGB-D System, pp. 306-313.

Santos, Milton Cesar Paes Federal Inst. of Espirito Santo
Santana, Lucas Vago Federal Inst. of Education, Science and Tech. of Espiri

Brandao, Alexandre Santos Federal Univ. of Vicosa
Sarcinelli-Filho, Mário Federal Univ. of Espirito Santo

16:20-16:40 WeBTT4.5

Quadrotor Control in a Wind Field, pp. 314-322.

Tran, Nguyen Khoi McGill Univ
Bulka, Eitan McGill Univ
Nahon, Meyer McGill Univ
Trentini, Mike DRDC-Suffield

WeCTT1 Room Evergreen A-B
Autonomy - III (Regular Session)

Chair: Rutherford, Matthew Univ. of Denver
Co-Chair: Rathinam, Texas a & M Univ
Sivakumar

16:50-17:10 WeCTT1.1

Modeling and Controller Design of a VTOL UAV, pp. 323-331.

Tekinalp, Ozan Middle East Tech. Univ
Onen, Anil Sami Middle East Tech. Univ

Kurtulus, Dilek Funda	Middle East Tech. Univ
Levent, Cevher	Middle East Tech. Univ
Senipek, Murat	Middle East Tech. Univ
Mutlu, Talha	Middle East Tech. Univ
Gungor, Osman	Middle East Tech. Univ
Uzunlar, Ismail Ozdemir	Middle East Tech. Univ

17:10-17:30 WeCTT1.2

High-Speed Vision-Based Autonomous Indoor Navigation of a Quadcopter, pp. 332-341.

Garcia, Adriano	Binghamton Univ
Mattison, Edward	Binghamton Univ
Ghose, Kanad	SUNY-Binghamton, Dept. of Computer Science

17:30-17:50 WeCTT1.3

Design and Analysis of a UAV for Skydiving, pp. 342-349.

How, David-Reyner Cailun	Univ. of Auckland
Barbarich-Bacher, Bianca Alessandra	Univ. of Auckland
Stol, Karl	Univ. of Auckland

17:50-18:10 WeCTT1.4

Non-Linear Model Predictive Control for Guidance of a Fixed-Wing UAV in Precision Deep Stall Landing, pp. 350-359.

Mathisen, Siri Holthe	Norwegian Univ. of Science and Tech
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech
Fossen, Thor I.	Norwegian Univ. of Sci. and Tech

18:10-18:30 WeCTT1.5

An Exact Algorithm for a Heterogeneous, Multiple Depot, Multiple Traveling Salesman Problem, pp. 360-365.

Sundar, Kaarthik	Texas A&M Univ
Rathinam, Sivakumar	Texas a & M Univ

WeCTT2 Room Evergreen C
Path Planning - III (Regular Session)

Chair: Zhang, Youmin	Concordia Univ
Co-Chair: Saripalli, Srikanth	Arizona State Univ

16:50-17:10 WeCTT2.1

Application of Guidance Laws to Quadrotor Landing, pp. 366-373.

Gautam, Alvika	IIT-Delhi
P. B, Sujit	Indraprastha Inst. of Information Tech. Delhi
Saripalli, Srikanth	Arizona State Univ

17:10-17:30 WeCTT2.2

A UAV Solution of Regional Surveillance Based on Pheromones and Artificial Potential Field Theory, pp. 374-379.

Qu, Yaohong	Northwestern Ploytechnical Univ
Zhang, Yintao	Northwestern Ploytechnical Univ
Zhang, Youmin	Concordia Univ

17:30-17:50 WeCTT2.3

4-Dimensional Trajectory Generation Algorithms for RPAS Mission Management Systems, pp. 1347-1355

Gardi, Alessandro Giacomo Maria	RMIT Univ
Ramasamy, Subramanian	RMIT Univ
Sabatini, Roberto	RMIT Univ

17:50-18:10 WeCTT2.4

*Collision Avoidance for UAVs Using Reachable Sets**.

Lin, Yucong	Arizona State Univ
Saripalli, Srikanth	Arizona State Univ

18:10-18:30 WeCTT2.5

Tracking Multiple Mobile Targets Using Cooperative Unmanned Aerial Vehicles, pp. 380-385.

Farmani, Negar	Univ. of Texas at San Antonio
Sun, Liang	Brigham Young Univ
Pack, Daniel	Univ. of Texas at San Antonio

WeCTT3 Room Conifer Ballroom
Air Vehicle Operation and Testbeds (Regular Session)

Chair: Chung, Timothy H.	Naval Postgraduate School
Co-Chair: Baraniello, Vincenzo Rosario	Italian Aerospace Res. Center

16:50-17:10 WeCTT3.1

GN&C Technologies for Remotely Piloted Air Systems: The Vision of the Italian Aerospace Research Center, pp. 1356-1363

Baraniello, Vincenzo Rosario	Italian Aerospace Res. Center
Corraro, Federico	CIRA, Italian Aerospace Res. Center
Di Capua, Gianluigi	Italian Aerospace Res. Center CIRA
Garbarino, Luca	Italian Aerospace Res. Center CIRA
Parrilli, Sara	Italian Aerospace Res. Center CIRA
Pigliasco, Gianpaolo	Italian Aerospace Res. Center CIRA
Rocchio, Riccardo	Italian Aerospace Res. Center CIRA

17:10-17:30 WeCTT3.2

Disturbance Rejection for a Quadrotor Aircraft through a Robust Control, pp. 386-392.

López, Jesús Ricardo	CINVESTAV
Gonzalez-Hernandez, Ivan	Cinvestav - IPN
Salazar, Sergio	Umi Lafmia Cinvestav
Rodriguez Mata, Abraham Efraim	Cinvestav
Ordaz, Jose Jairo	CINVESTAV
Osorio-Cordero, Antonio	CINVESTAV

17:30-17:50 WeCTT3.3

Visual Detection of Air-To-Air Refueling Drogue, pp. 393-402.

Krause, Stefan	German Aerospace Center
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17:50-18:10 WeCTT3.4

Multi-UAV Software Systems and Simulation Architecture, pp. 403-412.

Day, Michael	Naval Postgraduate School
Clement, Michael	Naval Postgraduate School
Russo, John D	Naval Postgraduate School
Davis, Duane	Naval Postgraduate School
Chung, Timothy H.	Naval Postgraduate School

18:10-18:30 WeCTT3.5

An Outdoor Scientific Data Drone Ground Truthing Test Site, pp. 413-420.

Smith, Brendan	Univ. of California, Merced
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Stark, Brandon	Univ. of California, Merced
Zhao, Tiebiao	MESA LAB at UC Merced
Chen, YangQuan	Univ. of California, Merced

WeCTT4	Room Aspen Amphitheater
Control Architecture - III (Regular Session)	

Chair: Orsag, Matko	Univ. of Zagreb
Co-Chair: Sarcinelli-Filho, Mário	Federal Univ. of Espirito Santo

16:50-17:10	WeCTT4.1
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Modelling and Control of a PVTOL Quadrotor Carrying a Suspended Load, pp. 421-427.

Pizetta, Igor	Federal Univ. of Espirito Santo
Brandao, Alexandre Santos	Federal Univ. of Vicosa
Sarcinelli-Filho, Mário	Federal Univ. of Espirito Santo

17:10-17:30	WeCTT4.2
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*Discrete-Time One-Step Ahead Prediction Control (DOPC) of a Quadcopter UAV with Constraints**.

Chen, Xi	RMIT Univ
Wang, Liuping	RMIT Univ

17:30-17:50	WeCTT4.3
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Autonomous UAS Controlled by Onboard Smartphone, pp. 428-431.

Bryant, Phillip	California State Univ. Channel Islands
Gradwell, Greg	Specialized Air Services, Inc.
Claveau, David	CSU Channel Islands

17:50-18:10	WeCTT4.4
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Trajectory Planning, Stabilization and Control of a Multicopter for European Robotics Challenge, pp. 432-438.

Haus, Tomislav	Univ. of Zagreb
Orsag, Matko	Univ. of Zagreb
Palunko, Ivana	Univ. of Dubrovnik
Bogdan, Stjepan	Univ. of Zagreb

18:10-18:30	WeCTT4.5
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Design and Implementation of a Mini Quadrotor Control System in GPS Denied Environments, pp. 439-446.

Liu, Chang	Univ. of Southampton
Prior, Stephen	Univ. of Southampton

Technical Program for Thursday June 11, 2015

ThATT1		Evergreen A-B
UAS Payloads (Regular Session)		
Chair: Quagliotti, Fulvia	Pol. Di Torino	
Co-Chair: Hoffer, Nathan	AggieAir, Utah State Univ. (USU)	
10:00-10:20	ThATT1.1	
<i>IDA-PBC Methodology for a Quadrotor UAV Transporting a Cable-Suspended Payload</i> , pp. 447-453.		
GUERRERO, MARIA	CENIDET	
EUSEBIA		
Mercado Ravell, Diego Alberto	Univ. De Tech. Compiegne	
Lozano, Rogelio	Univ. of Tech. of Compiègne	
Garcia Beltran, Carlos Daniel	Centro Nacional De Investigación Y Desarrollo Tecnológico	
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<i>Canopy Sampling Using an Aerial Manipulator: A Preliminary Study</i> , pp. 454-461.		
Kutia, James	Univ. of Auckland	
Stol, Karl	Univ. of Auckland	
Xu, Weiliang	Univ. of Auckland	
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Stendahl Leira, Frederik	Norwegian Univ. of Sci. and Tech	
Trnka, Kenan	Norwegian Univ. of Sci. and Tech	
Fossen, Thor I.	Norwegian Univ. of Sci. and Tech	
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech	
11:00-11:20	ThATT1.4	
<i>Short Wave Infrared (SWIR) Imaging Using Small Unmanned Aerial Systems (sUAS)</i> , pp. 472-478.		
Stark, Brandon	Univ. of California, Merced	
McGee, Matthew	Univ. of California, Merced	
Chen, YangQuan	Univ. of California, Merced	
11:20-11:40	ThATT1.5	
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Ristorio, Gianluca	Free Univ. of Bolzano	
Mazzetto, Fabrizio	Free Univ. of Bolzano	
Guglieri, Giorgio	Pol. Di Torino	
Quagliotti, Fulvia	Pol. Di Torino	
ThATT2		
Smart Sensors (Regular Session)		Evergreen C
Chair: Mancini, Adriano	Univ. Pol. Delle Marche	
Co-Chair: Saska, Martin	Czech Tech. Univ. in Prague	
10:00-10:20	ThATT2.1	
<i>On Estimation of Wind Velocity, Angle-Of-Attack and Sideslip Angle of Small UAVs Using Standard Sensors</i> , pp. 487-496.		
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech	
Cristofaro, Andrea	Norwegian Univ. of Sci. and Tech	
Sørensen, KIM	NTNU	
Hansen, Jakob Mahler	Norwegian Univ. of Sci. and Tech	
Fossen, Thor I.	Norwegian Univ. of Sci. and Tech	
10:20-10:40	ThATT2.2	
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Truth Crop Water Stress and Normalized Difference Vegetation Index (NDVI) from Small Unmanned Aerial System (sUAS), pp. 497-502.

Zhao, Tiebiao	MESA LAB at UC Merced
Stark, Brandon	Univ. of California, Merced
Chen, YangQuan	Univ. of California, Merced
Ray, Andrew	UCCE, Univ. of California, Div. of ANR
Doll, David	Univ. of California, Div. of ANR

10:40-11:00 ThATT2.3

A Laser Obstacle Detection and Avoidance System for Manned and Unmanned Aircraft Applications, pp. 503-510.

Ramasamy, Subramanian	RMIT Univ
Gardi, Alessandro Giacomo Maria	RMIT Univ
Liu, Jing	RMIT Univ
Sabatini, Roberto	RMIT Univ

11:00-11:20 ThATT2.4

High-Resolution Mapping of River and Estuary Areas by Using Unmanned Aerial and Surface Platforms, pp. 511-519.

Mancini, Adriano	Univ. Pol. Delle Marche
Frontoni, Emanuele	Univ. Pol. Delle Marche
Zingaretti, Primo	Univ. Pol. Delle Marche
Longhi, Sauro	Univ. Pol. Delle Marche

11:20-11:40 ThATT2.5

Accurate Fast-Mapping Range-Only SLAM for UAS Applications, pp. 520-527.

Torres-González, Arturo	Univ. De Sevilla
Martinez-de Dios, J.R.	Univ. of Seville
Ollero, Anibal	Univ. De Sevilla

ThATT3
UAS Sensor Fusion - I (Regular Session) Conifer Ballroom

Chair: Yang, Feng	Northwestern Pol. Univ
Co-Chair: Darrah, Marjorie	West Virginia Univ

10:00-10:20 ThATT3.1

Development of Multiple Unmanned Aircraft System and Flight Experiment, pp. 528-535.

Kim, Youngjoo	KAIST
Jung, Wooyoung	KAIST
Kim, Chanho	KAIST
Lee, Seongheon	Korea Advanced Inst. of Science and Tech
Tahk, Ki Hyeon	KAIST
Bang, Hyochoong	KAIST

10:20-10:40 ThATT3.2

A Collaborative GMPHD Filter for Fast Multi-Target Tracking, pp. 536-543.

Yang, Feng	Northwestern Pol. Univ
Chen, Hao	Northwestern Pol. Univ
Liu, Keli	Northwestern Pol. Univ

10:40-11:00 ThATT3.3

A Square-Root Unscented Kalman Filter for Attitude and Relative Position Estimation of a Tethered Unmanned Helicopter, pp. 544-553.

Sandino, Luis A.	Univ. of Seville
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Bejar, Manuel	Univ. Pablo De Olavide
Kondak, Konstantin	DLR (German Aerospace Center)
Ollero, Anibal	Univ. De Sevilla
11:00-11:20	ThATT3.4
<i>A Novel Magnetometer-Accelerometer Calibration Based on a Least Squares Approach</i> , pp. 1364-1372	
Ammann, Nikolaus	German Aerospace Center (DLR)
11:20-11:40	ThATT3.5
<i>Joint State and Parameter Estimation of Quadrotor Based on Extended Kalman Filter and Complementary Filter[†]</i> .	
Janusz, Wojciech	Silesian Univ. of Tech.
(WITHDRAWN)	
ThATT4	Aspen Amphitheater
Sense and Avoid Systems - I (Regular Session)	
Chair: Lozano, Rogelio	Univ. of Tech. of Compiègne
Co-Chair: Salazar, Sergio	Umi Lafmia Cinvestav
10:00-10:20	ThATT4.1
<i>A Vision Based Sense and Avoid System for Small Unmanned Helicopter</i> , pp. 554-560.	
Lyu, Yang	Northwestern Pol. Univ
PAN, Quan	Northwestern Pol. Univ
Zhang, Yizhai	Northwestern Pol. Univ
Zhao, Chunhui	Northwestern Pol. Univ
Haifeng, Zhu	Northwestern Pol. Univ
Tang, Tongguo	Northwestern Pol. Univ
10:20-10:40	ThATT4.2
<i>A UAS Obstacle Avoidance Strategy Based on Spiral Trajectory Tracking</i> , pp. 561-568.	
MUÑOZ PALACIOS, FILIBERTO	Univ. Pol. DE PACHUCA
Espinoza Quesada, Eduardo Steed	Univ. Pol. De Pachuca
Gonzalez-Hernandez, Ivan	Cinvestav - IPN
GARCIA CARRILLO, Luis Rodolfo	Texas A&M Univ. - Corp. Christi
Salazar, Sergio	Umi Lafmia Cinvestav
Lozano, Rogelio	Univ. of Tech. of Compiègne
10:40-11:00	ThATT4.3
<i>Sense and Collision Avoidance of Unmanned Aerial Vehicles Using Geometric Guidance and Flatness Approaches</i> , pp. 569-574.	
Fu, Yu	Concordia Univ
Soupin, Puthy	Marinvent Corp
Yu, Xiang	Concordia Univ
Zhang, Youmin	Concordia Univ
Cole, Phil	Marinvent Corp
11:00-11:20	ThATT4.4
<i>Design and Evaluation of Decision and Control Strategies for Autonomous Vision-Based See and Avoid Systems</i> , pp. 575-584.	
Mcfadyen, Aaron	Queensland Univ. of Tech
Mejias Alvarez, Luis	Queensland Univ. of Tech
11:20-11:40	ThATT4.5
<i>Deploying Speaker Verification Techniques to Vision Based RPAS Detect and Avoid</i> , pp. 585-596.	
Martin, Terrence Lance	Queensland Univ. of Tech
Mcfadyen, Aaron	Queensland Univ. of Tech

ThBTT1	Evergreen A-B
Fail Safe and Environmental Issues (Regular Session)	
Chair: Zhang, Youmin	Concordia Univ
Co-Chair: Sabatini, Roberto	RMIT Univ
14:00-14:20	ThBTT1.1
<i>Electromagnetic Compatibility Tests for Multirotor UAS</i> , pp. 597-606.	
Lombardi, Alessandro	Pol. Di Torino
Quagliotti, Fulvia	Pol. Di Torino
Benedetto, Fabio	Pol. Di Torino
Roccatto, Paolo Emilio	INRIM
Bellavia, Luciano	INRIM
Cinnirella, Luca	INRIM
14:20-14:40	ThBTT1.2
<i>UAV-Based Forest Fire Detection and Tracking Using Image Processing Techniques</i> , pp. 607-611.	
Yuan, Chi	Concordia Univ
Liu, Zhixiang	Concordia Univ
Zhang, Youmin	Concordia Univ
14:40-15:00	ThBTT1.3
<i>Fault Tolerant Cooperative Control of Multiple UAVs-UGVs under Actuator Faults</i> , pp. 612-617.	
Kamel, Mohamed A.	Concordia Univ
Ghamry, Khaled A.	Concordia Univ
Zhang, Youmin	Concordia Univ
15:00-15:20	ThBTT1.4
<i>Assessing Avionics-Based GNSS Integrity Augmentation Performance in UAS Mission and Safety-Critical Tasks</i> , pp. 1373-1382	
Sabatini, Roberto	RMIT Univ
Terry, Moore	Univ. of Nottingham
Chris, Hill	Univ. of Nottingham
Ramasamy, Subramanian	RMIT Univ
15:20-15:40	ThBTT1.5
<i>Fault Severity Based Integrated Fault Tolerant Controller for Quadrotor UAVs</i> , pp. 618-626.	
Merheb, Abdel-Razzak	LIU
Noura, Hassan	United Arab Emirates Univ
Bateman, François	Lab Des Sci. Des Systèmes D'info
Al-Jaroodi, Jameela	Univ. of Pittsburgh
ThBTT2	Evergreen C
UAS Communications (Regular Session)	
Chair: Rutherford, Matthew	Univ. of Denver
Co-Chair: Cetinsoy, Ertugrul	Istanbul Commerce Univ
14:00-14:20	ThBTT2.1
<i>Towards Optical Wireless Communications between Micro Unmanned Aerial and Ground Systems</i> , pp. 627-634.	
Cruz, Patricio J.	The Univ. of New Mexico
Fierro, Rafael	Univ. of New Mexico
14:20-14:40	ThBTT2.2
<i>Acquisition and Relaying of Data from a Floating Wireless Sensor Node Using an Unmanned Aerial Vehicle</i> , pp. 635-644.	
Barbatei, Remus Gabriel	Norwegian Univ. of Sci. and Tech
Skavhaug, Amund	Norwegian Univ. of Sci. and Tech

Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech
14:40-15:00	ThBTT2.3
<i>UAV-Based Data Communication in Wireless Sensor Networks: Models and Strategies</i> , pp. 645-652.	
Jawhar, Imad	UAEU
Mohamed, Nader	UAEU
Al-Jaroodi, Jameela	Univ. of Pittsburgh
15:00-15:20	ThBTT2.4
<i>Cognitive Radio Development for UAS Applications</i> , pp. 653-661.	
Anderson, Austin	Univ. of Colorado, Boulder
Frew, Eric W.	Univ. of Colorado, Boulder
Grunwald, Dirk	Univ. of Colorado, Boulder
15:20-15:40	ThBTT2.5
<i>Detecting and Locating Cell Phone Signals from Avalanche Victims Using Unmanned Aerial Vehicles</i> , pp. 662-671.	
Wolfe, Victor	Univ. of Colorado
Frobe, William	Univ. of Colorado
Shrinivasan, Vineetha	Univ. of Colorado
Hsieh, Tsung-Yen	Univ. of Colorado
ThBTT3	Conifer Ballroom
UAS Sensor Fusion - II (Regular Session)	
Chair: Shaqura, Mohammad	KAUST
Co-Chair: Brandao, Alexandre Santos	Federal Univ. of Vicosa
14:00-14:20	ThBTT3.1
<i>Low-Cost Sensors Based Data Fusion Techniques for RPAS Navigation and Guidance</i> , pp. 672-680.	
Cappello, Francesco	RMIT Univ
Ramasamy, Subramanian	RMIT Univ
Sabatini, Roberto	RMIT Univ
Liu, Jing	RMIT Univ
14:20-14:40	ThBTT3.2
<i>A Hybrid System Approach to Airspeed, Angle of Attack and Sideslip Estimation in Unmanned Aerial Vehicles</i> , pp. 681-690.	
Shaqura, Mohammad	KAUST
Claudel, Christian	UT Austin
14:40-15:00	ThBTT3.3
<i>Performance Evaluation of the Extended Kalman Filter and Unscented Kalman Filter</i> , pp. 691-699.	
Silva, Natassya Barlate Floro	Univ. of São Paulo, ICMC-USP
Wilson, Daniel B.	Australian Centre for Field Robotics, the Univ. of Sydney
Branco, Kalinka Regina Lucas Jaquie Castelo Branco	Univ. of São Paulo
15:00-15:20	ThBTT3.4
<i>Attitude Estimation of a Simulated Flight and GPS Positioning with Kalman Filter</i> , pp. 700-708.	
Querino, Luiz Carlos	Univ. of São Paulo (USP)
Rodrigues, Julio	Inst. of Mathematics and Computer Sciences / Univ. of S
Silva, Natassya Barlate Floro	Univ. of São Paulo, ICMC-USP
Branco, Kalinka Regina Lucas Jaquie Castelo Branco	Univ. of São Paulo
15:20-15:40	ThBTT3.5

Airborne Multisensor Management for Multitarget Tracking, pp. 709-714.

Kim, Youngjoo KAIST
 Bang, Hyochoong KAIST

ThBTT4 Aspen Amphitheater
Sense and Avoid Systems - II (Regular Session)

Chair: Martinez-de Dios, J.R. Univ. of Seville
 Co-Chair: Zsedrovits, Tamás Pázmány Péter Catholic Univ

14:00-14:20 ThBTT4.1

Formation Flight Control of Multirotor Helicopters with Collision Avoidance, pp. 715-722.

Viana, Icaro Bezerra ITA - Aeronautics Inst. of Tech
 Prado, Igor Afonso Acampora Inst. Tecnológico De Aeronáutica
 Santos, Davi Antônio Inst. Tecnológico De Aeronáutica
 Góes, Luiz Carlos Sandoval ITA Aeronautical Inst. of Tech

14:20-14:40 ThBTT4.2

A Unified Approach to Cooperative and Non-Cooperative Sense-And-Avoid, pp. 723-731.

Ramasamy, Subramanian RMIT Univ
 Sabatini, Roberto RMIT Univ

14:40-15:00 ThBTT4.3

A Novel Algorithm for Distant Aircraft Detection, pp. 732-741.

Zarándy, Ákos Computer and Automation Res. Inst

Zsedrovits, Tamás Pázmány Péter Catholic Univ
 Pencz, Borbala Hungarian Acad. of Sciences Inst. for Computer Science And

Nemeth, Mate Inst. for Computer Science and Control of the Hungarian Acad

Vanek, Balint The Computer and Automation Res. Inst. Hungarian Academy

15:00-15:20 ThBTT4.4

Sensor Fusion for Sense and Avoid for Small UAS without ADS-B, pp. 742-751.

Jackson, Joseph A. Scientific Systems Company, Inc.
 Boskovic, Jovan D. Scientific Systems Co. Inc.
 Diel, David D. Scientific Systems Company, Inc.

15:20-15:40 ThBTT4.5

A Statistical Approach for Trajectory Analysis and Motion Segmentation for Freely Moving Cameras[†].

Li, Jiaxin National Univ. of Singapore
 Lin, Feng National Univ. of Singapore
 Chen, Ben M. National Univ. of Singapore
 (WITHDRAWN)

Technical Program for Friday June 12, 2015

FrATT1		Evergreen A-B
Micro and Mini UASs - I (Regular Session)		
Chair: Defaÿ, François	Inst. Supérieur De L'aéronautique Et De L'espace - ISAE	
Co-Chair: Castillo, Pedro	Unviersité De Tech. De Compiègne	
09:00-09:20		FrATT1.1
<i>Optimized Performance of a Morphing Micro Air Vehicle</i> , pp. 752-758.		
Barcala, Miguel	Univ. Pol. De Madrid	
Rodríguez-Sevillano, Ángel Antonio	Univ. Pol. De Madrid	
Crespo Moreno, Javier	Tech. Univ. of Madrid (Univ. Pol. De Madri	
Bardera-Mora, Rafael	Inst. Nacional De Técnica Aeroespacial "Esteban Terradas" (I	
Silva, Alberto Jose	Univ. Pol. De Madrid	
09:20-09:40		FrATT1.2
<i>Design of Flight Control System for Quad Tilt-Wing UAV</i> , pp. 759-763.		
Mikami, Takahito	Nihon Univ	
Uchiyama, Kenji	Nihon Univ	
09:40-10:00		FrATT1.3
<i>A Review on the Platform Design, Dynamic Modeling and Control of Hybrid UAVs</i> , pp. 764-773.		
Saeed, Adnan Salem Obaid	Khalifa Univ	
Bani-Younes, Ahmad	Khalifa Univ	
Islam, Shafiqul	Univ. of Ottawa	
Dias, Jorge	Khalifa Univ	
seneviratne, Lakmal	Kings Coll. London	
Cai, Guowei	Khalifa Univ	
10:00-10:20		FrATT1.4
<i>Longitudinal Study of a Tilt-Body Vehicle: Modeling, Control and Stability Analysis</i> , pp. 774-782.		
Ribeiro Lustosa, Leandro	Inst. Supérieur De L'aéronautique Et De L'espace - ISAE	
Defaÿ, François	Inst. Supérieur De L'aéronautique Et De L'espace - ISAE	
Moschetta, Jean-Marc	Inst. Supérieur De L'aéronautique Et De L'espace - ISAE	
10:20-10:40		FrATT1.5
<i>Quadrotor Quaternion Control</i> , pp. 783-789.		
Cariño Escobar, Jossué	CINVESTAV-IPN	
Abaunza, Hernán	CINVESTAV-IPN	
Castillo, Pedro	Unviersité De Tech. De Compiègne	
FrATT2		Evergreen C
UAS Navigation - I (Regular Session)		
Chair: Fossen, Thor I.	Norwegian Univ. of Sci. and Tech	
Co-Chair: Lozano, Rogelio	Univ. of Tech. of Compiègne	
09:00-09:20		FrATT2.1
<i>Development of an Unmanned Aerial Vehicle for Rooftop Landing and Surveillance</i> , pp. 790-796.		
LI, Kun	National Univ. of Singapore	

Liu, Peidong	National Univ. of Singapore	
Pang, Tao	National Univ. of Singapore	
Yang, Zhaolin	National Univ. of Singapore	
Chen, Ben M.	National Univ. of Singapore	
09:20-09:40		FrATT2.2
<i>Adaptive UKF-SLAM Based on Magnetic Gradient Inversion Method for Underwater Navigation</i> , pp. 797-801.		
WU, MENG		Wuhan Univ
09:40-10:00		FrATT2.3
<i>Quadrotor's Trajectory Tracking Control Using Monocular Vision Navigation</i> , pp. 802-808.		
Mercado Ravell, Diego Alberto	Univ. De Tech. Compiègne	
Castillo, Pedro	Unviersité De Tech. De Compiègne	
Lozano, Rogelio	Univ. of Tech. of Compiègne	
10:00-10:20		FrATT2.4
<i>Experimental Validation of a Uniformly Semi-Globally Exponentially Stable Non-Linear Observer for GNSS and Camera-Aided Inertial Navigation for Fixed-Wing UAVs</i> , pp. 809-818.		
Fusini, Lorenzo	Norwegian Univ. of Sci. and Tech	
Hosen, Jesper	Norwegian Univ. of Sci. and Tech	
Helgesen, Håkon Hagen	Norwegian Univ. of Sci. and Tech	
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech	
Fossen, Thor I.	Norwegian Univ. of Sci. and Tech	
10:20-10:40		FrATT2.5
<i>Multi-Mode Flight Sliding Mode Control System for a Quadrotor</i> , pp. 819-828.		
Villanueva, Abraham	Centro De Investigación Y De Estudios Avanzados Del Inst. Po	
Castillo-Toledo, Bernardino	Centro De Investigación Y De Estudios Avanzados - CINVESTAV Del	
Bayro-Corrochano, Eduardo	Centro De Investigacion Y De Estudios Avanzados Del Inst. Po	
Luque-Vega, Luis F.	ITESO Univ	
González-Jiménez, Luis Enrique	Iteso Ac	
FrATT3		Conifer Ballroom
UAS Swarms - I (Regular Session)		
Chair: Maza, Ivan		Univ. De Sevilla
Co-Chair: GARCIA CARRILLO, Luis Rodolfo		Texas A&M Univ. - Corp. Christi
09:00-09:20		FrATT3.1
<i>Dynamic Zone Assignment under Priorities for Perimeter Surveillance Missions with Aerial Robots</i> , pp. 829-836.		
Acevedo, José Joaquín		Inst. Superior Técnico
Arrue, B.C.		Escuela Superior De Ingenieros, Univ. De Sevilla
Maza, Ivan		Univ. De Sevilla
Ollero, Anibal		Univ. De Sevilla
09:20-09:40		FrATT3.2
<i>Distributed Near Optimal Flocking Control for Multiple Unmanned Aircraft Systems</i> , pp. 837-843.		
Xu, Hao		Texas A&M Univ. Christi
GARCIA CARRILLO, Luis Rodolfo		Texas A&M Univ. - Corp. Christi

09:40-10:00 FrATT3.3

Cooperative Motion Control of a Formation of UAVs, pp. 844-851.

Rodrigues, Rômulo Univ. of São Paulo
Aguiar, A. Pedro Faculty of Engineering, Univ. of Porto (FEUP)

10:00-10:20 FrATT3.4

MAV-Swarms: Unmanned Aerial Vehicles Stabilized Along a Given Path Using Onboard Relative Localization, pp. 852-861.

Saska, Martin Czech Tech. Univ. in Prague

10:20-10:40 FrATT3.5

Biologically Inspired Aircraft Swarm Guidance Logic Based on Topological Metric[†].

Garcia, Gonzalo Univ. of Kansas
Keshmiri, Shawn Univ. of Kansas

FrATT4 Aspen Amphitheater
Airspace Control (Regular Session)

Chair: Quagliotti, Fulvia Pol. Di Torino
Co-Chair: Guerin, David IFATCA

09:00-09:20 FrATT4.1

Autonomous Search and Tracking of Objects Using Model Predictive Control of Unmanned Aerial Vehicle and Gimbal: Hardware-In-The-Loop Simulation of Payload and Avionics, pp. 862-871.

Skjong, Espen Norwegian Univ. of Sci. and Tech
Aas Nundal, Stian Norwegian Univ. of Sci. and Tech
Stendahl Leira, Frederik Norwegian Univ. of Sci. and Tech
Johansen, Tor Arne Norwegian Univ. of Sci. and Tech

09:20-09:40 FrATT4.2

Structured Robust Control-Loop Design with Input Saturations for Tandem Ducted Fan Vehicle, pp. 872-877.

Xiang, Changle Beijing Inst. of Tech
Wang, Yang Beijing Inst. of Tech
Ma, Yue Beijing Inst. of Tech
Xu, Bin Beijing Inst. of Tech

09:40-10:00 FrATT4.3

Quaternion-Based Robust Attitude Control for Quadrotors, pp. 878-883.

Liu, Hao Beihang Univ
Wang, Xiafu Tsinghua University

10:00-10:20 FrATT4.4

Consideration of Wake Turbulence During the Integration of Remotely Piloted Aircraft into the Air Traffic Management System, pp. 884-893.

Guerin, David IFATCA

10:20-10:40 FrATT4.5

Lateral-Directional Control for a Fixed Wing Vehicle Based on the Total Energy Control System Approach, pp. 894-902.

Corona-Sanchez, José J. ESIME Azcapotzalco
Rodriguez Cortes, Hugo CINVESTAV-IPN

FrBTT1 Evergreen A-B
Micro and Mini UASs - II (Regular Session)

Chair: Campoy, Pascual Univ. Pol. Madrid

Co-Chair: Rodriguez-Cortes, Northeastern Univ
Hugo

11:00-11:20 FrBTT1.1

Ground Control of a Hybrid Tricopter, pp. 903-908.

Servais, Etienne Lab. of Signal and Systems
D'Andrea-Novel, Brigitte Ec. Des Mines De Paris
Mounier, Hugues Univ. Paris Sud 11

11:20-11:40 FrBTT1.2

Transition Flight Control of a Cyclic Tiltrotor UAV Based in Gain-Scheduling Strategy, pp. 909-914.

Hernandez-Garcia, Rogelio CINVESTAV
Gerardo
Rodriguez Cortes, Hugo CINVESTAV-IPN

11:40-12:00 FrBTT1.3

Efficient Visual Odometry and Mapping for Unmanned Aerial Vehicle Using ARM-Based Stereo Vision Pre-Processing System, pp. 915-920.

Fu, Changhong Univ. Pol. De Madrid
Carrio, Adrian Univ. Pol. De Madrid
Campoy, Pascual Univ. Pol. Madrid

12:00-12:20 FrBTT1.4

Dynamic Modeling of a Multi-Rotorcraft UAS with Morphing Capabilities, pp. 921-929.

Ortega Vargas, Giovanni Univ. Pol. De Pachuca
Hintz, Christoph Texas A&M Univ. - Corp. Christi
GARCIA CARRILLO, Luis Texas A&M Univ. - Corp. Christi
Rodolfo
MUÑOZ PALACIOS, Univ. Pol. DE PACHUCA
FILIBERTO
Espinoza Quesada, Eduardo Univ. Pol. De Pachuca
Steed

12:20-12:40 FrBTT1.5

Intuitive Remote Control of Micro Unmanned Helicopter within Line of Sight[†].

Ai, Zhuming Naval Res. Lab
Livingston, Mark Naval Res. Lab

FrBTT2 Evergreen C
UAS Navigation - II (Regular Session)

Chair: Valavanis, Kimon Univ. of Denver
Co-Chair: Mejias Alvarez, Luis Queensland Univ. of Tech

11:00-11:20 FrBTT2.1

Outdoor Haptic Teleoperation of a Hexarotor UAV, pp. 930-937.

Reyes, Sergio Umi Lafmia Cinvestav
Romero, Hugo Icbi - Uaeh
Salazar, Sergio Umi Lafmia Cinvestav
Lozano, Rogelio Univ. of Tech. of Compiègne
Santos, Omar Univ. Autónoma Del Estado De Hidalgo

11:20-11:40 FrBTT2.2

Optical Flow Localisation and Appearance Mapping (OFLAAM) for Long-Term Navigation, pp. 938-946.

Pastor, Daniel Cranfield Univ
Shin, Hyo-Sang Cranfield Univ
Waldock, Antony BAE Systems

11:40-12:00 FrBTT2.3

A Decentralized Geometric Approach for the Formation Keeping in Unmanned Aircraft Navigation, pp. 947-955.

Bereg, Sergey	Univ. of Texas at Dallas
Díaz-Báñez, José-Miguel	Univ. of Seville
Lopez, Mario Alberto	Univ. of Denver
Rozario, Timothy	Univ. of Texas at Dallas
Valavanis, Kimon	Univ. of Denver

12:00-12:20 FrBTT2.4

Autonomous Visual Navigation of Unmanned Aerial Vehicle for Wind Turbine Inspection, pp. 956-965.

Stokkeland, Martin	Norwegian Univ. of Sci. and Tech
Klausen, Kristian	Norwegian Univ. of Sci. and Tech
Johansen, Tor Arne	Norwegian Univ. of Sci. and Tech

12:20-12:40 FrBTT2.5

Improving Monocular SLAM with Altimeter Hints for Fixed-Wing Aircraft Navigation and Emergency Landing, pp. 966-974.

Andert, Franz	German Aerospace Center
Mejias Alvarez, Luis	Queensland Univ. of Tech

FrBTT3 Conifer Ballroom

UAS Swarms - II (Regular Session)

Chair: Zhang, Youmin	Concordia Univ
Co-Chair: Ma, Yue	Beijing Inst. of Tech

11:00-11:20 FrBTT3.1

Multiple Cooperative UAVs Target Tracking Using Learning Based Model Predictive Control, pp. 1383-1390

Hafez, Ahmed Taimour Kamaleldin	Queen's Univ
Givigi, Sidney	Royal Military Coll. of Canada
Ghamry, Khaled A.	Concordia Univ
Yousefi, Shahram	Queen's Univ

11:20-11:40 FrBTT3.2

Leader-Follower Formation Control of Unmanned Aerial Vehicles with Fault Tolerant and Collision Avoidance Capabilities, pp. 975-980.

Liu, Zhixiang	Concordia Univ
Yu, Xiang	Concordia Univ
Yuan, Chi	Concordia Univ
Zhang, Youmin	Concordia Univ

11:40-12:00 FrBTT3.3

Decentralized Information-Theoretic Task Assignment for Searching and Tracking of Moving Targets, pp. 981-986.

Moon, Sangwoo	Korea Air Force Acad
Yang, Kwangjin	Korea Air Force Acad
Gan, Seng Keat	The Univ. of Sydney
Shim, David Hyunchul	Korea Advanced Inst. of Science and Tech

12:00-12:20 FrBTT3.4

Formation Control of Multiple Quadrotors Based on Leader-Follower Method, pp. 987-992.

Ghamry, Khaled A.	Concordia Univ
Zhang, Youmin	Concordia Univ

12:20-12:40 FrBTT3.5

Immersive Displays for Building Spatial Knowledge in Multi-UAV Operations, pp. 993-998.

Ruiz, Juan Jesus	Univ. of Seville
Viguria, Antidio	FADA-CATEC
Martinez-de Dios, J.R.	Univ. of Seville
Ollero, Anibal	Univ. De Sevilla

FrBTT4 Aspen Amphitheater

UAS Applications - I (Regular Session)

Chair: TURANOBUZ, Eren	ASELSAN
Co-Chair: Sarcinelli-Filho, Mário	Federal Univ. of Espirito Santo

11:00-11:20 FrBTT4.1

Assembly Planning for the Construction of Structures with Multiple UAS Equipped with Robotic Arms, pp. 999-1008.

Muñoz-Morera, Jorge	Univ. De Sevilla
Maza, Ivan	FIUS
Fernandez-Agüera, Carmelo	Univ. De Sevilla
Caballero, Fernando	Univ. of Seville
Ollero, Anibal	Univ. De Sevilla

11:20-11:40 FrBTT4.2

Sphere: A Novel Platform for Increasing Safety & Security on Unmanned Systems, pp. 1009-1016.

Pigatto, Daniel Fernando	Inst. of Mathematics and Computer Sciences (ICMC) / Univ
Smith, James	Univ. of the West of England
Branco, Kalinka Regina Lucas Jaque Castelo Branco	Univ. of São Paulo

11:40-12:00 FrBTT4.3

Helicopter GNC System for Autonomous Landing by Using a Tether in a GPS Denied Scenario, pp. 1017-1023.

Alarcón, Francisco	FADA-CATEC
Santamaria, Daniel	CATEC
Viguria, Antidio	FADA-CATEC
Ollero, Anibal	Univ. De Sevilla
Heredia, Guillermo	Univ. of Seville

12:00-12:20 FrBTT4.4

Design of a Medium Range Tactical UAV and Improvement of Its Performance by Using Winglets, pp. 1024-1033.

TURANOBUZ, Eren	ASELSAN
Alemdaroglu, Nafiz	Middle East Tech. Univ

FrCTT1 Evergreen A-B

Micro and Mini UASs - III (Regular Session)

Chair: Tekinalp, Ozan	Middle East Tech. Univ
Co-Chair: Zsedrovits, Tamás	Pázmány Péter Catholic Univ

14:00-14:20 FrCTT1.1

Biologically-Inspired Visual Stabilization of a Rotorcraft UAV in Unknown Outdoor Environments, pp. 1034-1043.

Denuelle, Aymeric	Queensland Brain Inst. the Univ. of Queensland
Thurrowgood, Saul	Queensland Brain Inst. the Univ. of Queensland
Strydom, Reuben	Queensland Brain Inst. the Univ. of Queensland
Kendoul, Farid	CSIRO Australia
Srinivasan, Mandyam V.	Queensland Brain Inst. the Univ. of Queensland

14:20-14:40	FrCTT1.2
<i>DCTAM: Drift-Corrected Tracking and Mapping for Autonomous Micro Aerial Vehicles</i> , pp. 1044-1051.	
Scherer, Sebastian A.	Univ. of Tübingen
Yang, Shaowu	National Univ. of Defense Tech
Zell, Andreas	Univ. of Tübingen

14:40-15:00	FrCTT1.3
<i>Development of Co-Axial Y6-Rotor UAV - Design, Mathematical Modeling, Rapid Prototyping and Experimental Validation</i> . pp. 1391-1400	
Czyba, Roman	Silesian Univ. of Tech
Szafranski, Grzegorz Jaroslaw	Silesian Univ. of Tech
Janik, Marcin	Silesian Univ. of Tech
Pampuch, Krzysztof	Silesian Univ. of Tech
Hecel, Michal	Silesian Univ. of Tech

15:00-15:20	FrCTT1.4
<i>Aerodynamic Analysis and Performance of a Mini Airplane UAV</i> , pp. 1052-1057.	
Guerrero Velez, Fernando	CIIE-FIME-UANL
Martinez Herrera, Victor	CIIA-FIME-UANL
Garcia Salazar, Octavio	CIIA-FIME-UANL
Sanchez, Anand	CINVESTAV
Espinoza Quesada, Eduardo Steed	Univ. Pol. De Pachuca

15:20-15:40	FrCTT1.5
<i>Optimal Design of a Miniature Quad Tilt Rotor UAV</i> , pp. 1058-1067.	
Kahvecioglu, Ahmet Caner	ASELSAN Inc.
Alemdaroglu, Nafiz	Middle East Tech. Univ

FrCTT2	Evergreen C
UAS Navigation - III (Regular Session)	
Chair: Morrison, James R.	KAIST
Co-Chair: Barbatei, Remus Gabriel	Norwegian Univ. of Science and Tech

14:00-14:20	FrCTT2.1
<i>Cooperative UAV Navigation Based on Distributed Multi-Antenna GNSS, Vision, and MEMS Sensors</i> , pp. 1068-1077.	
Vetrella, Amedeo Rodi	Univ. of Naples "Federico II"
Fasano, Giancarmine	Univ. of Naples "Federico II"
Renga, Alfredo	Univ. of Naples "Federico II"
Accardo, Domenico	Univ. of Naples "Federico II"

14:20-14:40	FrCTT2.2
<i>Performance-Aware Flight Path Planning for Unmanned Aircraft in Uniform Wind Fields</i> , pp. 1078-1087.	
Schopferer, Simon	DLR
Pfeifer, Thorsten	DLR

14:40-15:00	FrCTT2.3
<i>A Robust Vision-Based Runway Detection and Tracking Algorithm for Automatic UAV Landing</i> , pp. 1088-1097.	
Abu-Jbara, Khaled	KAUST
AlHeadary, Wael	KAUST
Sundaramoorthi, Ganesh	KAUST
Claudiel, Christian	UT Austin

15:00-15:20	FrCTT2.4
<i>Light-Weight Quadrotor with On-Board Absolute Vision-Aided</i>	

<i>Navigation</i> , pp. 1098-1107.	
Magree, Daniel	Georgia Inst. of Tech
van Dalen, Gerald J.J.	Delft Univ. of Tech
Haviland, Stephen	Georgia Inst. of Tech
Johnson, Eric N.	Georgia Inst. of Tech

15:20-15:40	FrCTT2.5
<i>Decision Support Scheduling for Maritime Search and Rescue Planning with a System of UAVs and Fuel Service Stations</i> , pp. 1108-1117.	
Lee, Seunghyeon	Korea Advanced Inst. of Science and Tech
Morrison, James R.	KAIST

FrCTT3	Conifer Ballroom
UAS Simulation & Training - I (Regular Session)	
Chair: Nahon, Meyer	McGill Univ
Co-Chair: Lozano, Rogelio	Univ. of Tech. of Compiègne

14:00-14:20	FrCTT3.1
<i>Robust Altitude Control Scheme for a Quadrotor UAV Using Integral Action in Sliding-Mode Controller for Chattering Reduction*</i> .	
Gonzalez-Hernandez, Ivan	Cinvestav - IPN
Salazar-Cruz, Sergio	Univ. De Tech. De Compiègne
Lozano, Rogelio	Univ. of Tech. of Compiègne

14:20-14:40	FrCTT3.2
<i>Numerical Simulation of Unsteady Flow past Autorotating Rotor in Gyroplane Level Flight</i> , pp. 1118-1127.	
Xiang, Changle	Beijing Inst. of Tech
Yang, Xingbang	Beijing Inst. of Tech
Xu, Bin	Beijing Inst. of Tech
Han, Han	Beijing Inst. of Tech
Liu, Liyuan	Beijing Inst. of Tech

14:40-15:00	FrCTT3.3
<i>Real-Time Modeling of Agile Fixed-Wing UAV Aerodynamics</i> , pp. 1128-1135.	
Khan, Waqas	McGill Univ
Nahon, Meyer	McGill Univ

15:00-15:20	FrCTT3.4
<i>Modeling and Simulation Analysis of an Unmanned Tandem Ducted Fan Vehicle with Tilting System</i> , pp. 1136-1144.	
Xiang, Changle	Beijing Inst. of Tech
Fan, Wei	Beijing Inst. of Tech
Liu, Hui	Beijing Inst. of Tech
Xu, Bin	Beijing Inst. of Tech
Huang, Nan	Beijing Inst. of Tech

15:20-15:40	FrCTT3.5
<i>Modeling the Propeller Effect on Tail Controls and Trim Analysis for Hand Launch of a UAV</i> , pp. 1145-1154.	
Olcer, Fahri Ersel	Aselsan, Inc., MGEO Sec

FrCTT4	Aspen Amphitheater
UAS Applications - II (Regular Session)	
Chair: Theilliol, Didier	Univ. of Lorraine
Co-Chair: Lynch, Alan	U Alberta

14:00-14:20	FrCTT4.1
<i>Development and Flight Test of an Area Monitoring System</i>	

Using Unmanned Aerial Vehicles and Unattended Ground Sensors, pp. 1155-1164.

Rasmussen, Steven Miami Valley Aerospace LLC
Kingston, Derek B. Air Force Res. Lab

14:20-14:40 FrCTT4.2

Optimization-Based Reliable Control Allocation Design for Over-Actuated Systems, pp. 1165-1170.

Theilliol, Didier Univ. of Lorraine
Weber, Philippe Univ. De Lorraine
Chamseddine, Abbas École De Tech. Supérieure
Zhang, Youmin Concordia Univ

14:40-15:00 FrCTT4.3

Experimental Validation of Dynamic Visual Servoing for a Quadrotor Using a Virtual Camera, pp. 1171-1180.

Fink, Geoff Univ. of Alberta
Xie, Hui Univ. of Alberta
Lynch, Alan U Alberta
Jagersand, Martin Univ. of Alberta

15:00-15:20 FrCTT4.4

Flight Demonstration of Unmanned Airplane for Radiation Monitoring System with Terrain-Following Controller[†].

Sato, Masayuki Japan Aerospace Exploration Agency

(WITHDRAWN)

FrDTT1 Evergreen A-B
Micro and Mini UASs - IV (Regular Session)

Chair: Lozano, Rogelio Univ. of Tech. of Compiègne
Co-Chair: Maza, Ivan FIUS

15:50-16:10 FrDTT1.1

A High-Performance MAV for Autonomous Navigation in Complex 3D Environments, pp. 1181-1190.

Beul, Marius Univ. of Bonn
Krombach, Nicola Univ. of Bonn
Zhong, Yongfeng Univ. of Bonn
Droeschel, David Univ. of Bonn
Nieuwenhuisen, Matthias Univ. of Bonn
Behnke, Sven Univ. of Bonn

16:10-16:30 FrDTT1.2

A Smartphone Based Quadrotor: Attitude and Position Estimation, pp. 1191-1199.

Aldrovandi, Lorenzo Univ. of Bologna
Hayajneh, Mohammad Univ. of Bologna
Melega, Marco Alma Mater Studiorum - Univ. Di Bologna
Furci, Michele DEI - Univ. of Bologna
Naldi, Roberto Univ. Di Bologna
Marconi, Lorenzo Univ. Di Bologna

16:30-16:50 FrDTT1.3

Monocular Vision-Based Autonomous Navigation System on a Toy Quadcopter in Unknown Environments, pp. 1200-1209.

Huang, Rui Simon Fraser Univ
Tan, Ping Simon Fraser Univ
Chen, Ben M. National Univ. of Singapore

16:50-17:10 FrDTT1.4

Robust Path Following Using a Small Fixed-Wing Airplane for Aerial Research, pp. 1210-1218.

Escamilla Núñez, Héctor CINVESTAV
Flores Colunga, Gerardo Lafmia -Umi Cnrs 3175 - Cinvestav Ramon
Lozano, Rogelio Univ. of Tech. of Compiègne

17:10-17:30 FrDTT1.5

Flying Inverted Pendulum Trajectory Control on Robust Intelligent Sensing and Control Multi-Agent Analysis Platform, pp. 1219-1224.

Maughan, Douglas Spencer Utah State Univ
Erekson, Ishmaal Timothy Utah State Univ
Sharma, Rajnikant Utah State Univ

FrDTT2 Evergreen C
Regulations, Risk Analysis, and Security (Regular Session)

Chair: Beard, Randal W. Brigham Young Univ
Co-Chair: Zoldi, Dawn United States Air Force Acad

15:50-16:10 FrDTT2.1

U.S. Domestic Regulation of National Airspace: An Evolution and Suggested Way Ahead, pp. 1225-1234.

Zoldi, Dawn United States Air Force Acad
Speirs, Greg JAG Corp

16:10-16:30 FrDTT2.2

An Unmanned Aerial Traffic Management Solution for Cities Using an Air Parcel Model, pp. 1235-1240.

Foina, Aislan UC Berkeley
Krainer, Clemens Univ. of Salzburg, Austria
Sengupta, Raja Univ. of California at Berkeley

16:30-16:50 FrDTT2.3

A Conceptual Third Party Risk Model for Personal and Unmanned Aerial Vehicles, pp. 1241-1249.

Aalmoes, Roalt National Aerospace Lab. NLR, the Netherlands
Cheung, Yuk Shan NLR
Sunil, Emmanuel TU Delft
Hoekstra, Jacco TU Delft
Bussink, Frank NLR

16:50-17:10 FrDTT2.4

Unmanned Aerial Vehicle Security Using Behavioral Profiling, pp. 1250-1259.

Birnbbaum, Zachary Binghamton Univ
Dolgikh, Andrey Binghamton Univ
O'Brien, Edward Binghamton Univ
Skormin, Victor Binghamton Univ
Muller, Daniel Binghamton Univ
Stracquodaine, Christina Binghamton Univ

17:10-17:30 FrDTT2.5

Multiple Target Tracking and Stationary Object Detection in Video with Recursive-RANSAC and Tracker-Sensor Feedback, pp. 1260-1269.

Ingersoll, Kyle Brigham Young Univ
Niedfeldt, Peter Brigham Young Univ
Beard, Randal W. Brigham Young Univ

FrDTT3 Conifer Ballroom
UAS Simulation & Training - II (Regular Session)

Chair: Chen, YangQuan Univ. of California, Merced

Co-Chair: Theilliol, Didier Univ. of Lorraine

15:50-16:10 FrDTT3.1

Effect of Competing V-Tail Models on a UAS 6-DOF Nonlinear Simulation, pp. 1270-1277.

Smith, Nathan Univ. of Kansas
Keshmiri, Shawn Univ. of Kansas
Lykins, Ryan Univ. of Kansas

16:10-16:30 FrDTT3.2

Forward Flight Attitude Control of Unmanned Small-Scaled Gyroplane Based on μ -Synthesis, pp. 1278-1285.

Ma, Yue Beijing Inst. of Tech
Huang, Bin Beijing Inst. of Tech
Xiang, Changle Beijing Inst. of Tech
Wang, Weida Beijing Inst. of Tech
Huang, Nan Beijing Inst. of Tech

16:30-16:50 FrDTT3.3

Modelling and Hovering Control of a Novel Multi-Tandem Ducted Fan Vehicle, pp. 1286-1294.

Xu, Bin Beijing Inst. of Tech
WANG, XIAOLIANG Beijing Inst. of Tech
Xiang, Changle Beijing Inst. of Tech
Ma, Yue Beijing Inst. of Tech
Chen, Wanming Beijing Inst. of Tech

16:50-17:10 FrDTT3.4

Small Low-Cost Unmanned Aerial Vehicle System Identification by Error Filtering Online Learning (EFOL) Enhanced Least Squares Method, pp. 1295-1303.

Hoffer, Nathan AggieAir, Utah State Univ. (USU)
Coopmans, Calvin Utah State Univ
Fullmer, R. Reese Utah State Univ
Chen, YangQuan Univ. of California, Merced

17:10-17:30 FrDTT3.5

UAVs Team Flight Training Based on a Virtual Leader: Application to a Fleet of Quadrirotors, pp. 1304-1309.

BELKADI, Adel Univ. De Lorraine
CIARLETTA, Laurent Univ. De Lorraine, Loria
Theilliol, Didier Univ. of Lorraine

FrDTT4 Aspen Amphitheater

UAS Applications - III (Regular Session)

Chair: Rutherford, Matthew Univ. of Denver
Co-Chair: PB, Sujit Indraprastha Inst. of Information Tech. Delhi

15:50-16:10 FrDTT4.1

On Cooperation between a Fuel Constrained UAV and a Refueling UGV for Large Scale Mapping Applications, pp. 1310-1317.

Maini, Parikshit IIT D
PB, Sujit Indraprastha Inst. of Information Tech. Delhi

16:10-16:30 FrDTT4.2

Model-Free Observer for State Estimation Applied to a Quadrotor, pp. 1318-1324.

Al Younes, Younes Higher Coll. of Tech
Noura, Hassan United Arab Emirates Univ
Muflehi, Mohamad Higher Coll. of Tech

RABHI, ABDELHAMID MIS

El Hajjaji, Ahmed Univ. De Picardie-Jules Verne

16:30-16:50 FrDTT4.3

Trajectory Tracking for a Quadcopter Using MPC on a 3D Terrain, pp. 1325-1330.

Singhal, Rahul Indraprastha Inst. of Information and Tech. Delhi
P. B, Sujit Indraprastha Inst. of Information Tech. Delhi

16:50-17:10 FrDTT4.4

A Vision Based Aerial Robot Solution for the Mission 7 of the International Aerial Robotics Competition, pp. 1331-1340.

Sanchez-Lopez, Jose Luis CSIC - Univ. Pol. De Madrid, Centro De Automatica Y
Pestana Puerta, Jesus Computer Vision Group, Centre for Automation and Robotics, CSIC
Collumeau, Jean-François CSIC - Univ. Pol. De Madrid, Centro De Automatica Y
Suárez Fernández, Ramón A. Univ. Pol. De Madrid
Campoy, Pascual Univ. Pol. Madrid
Molina, Martin Univ. Pol. De Madrid, Departamento Inteligencia Art