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Chair: Sharma, Rajnikant University of Cincinnati

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Suárez Cansino, Jól	Autonomous University, Hidalgo

Espinoza Quesada, Eduardo Steed Center for Research and Advanced Studies of the National Polytec

GARCIA CARRILLO, Luis Rodolfo Texas A&M University - Corpus Christi

Ramos-Velasco, Luis Enrique Universidad Politécnica Metropolitana De Hidalgo, México

Lozano, Rogelio University of Technology of Compiègne

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Landry, René Jr.	Superior Technology School
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Choi, Han-Lim	Korea Advanced Institute of Science and Technology	Primatesta, Stefano	Politecnico Di Torino
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Syracuse University
Syracuse University
Syracuse University School of
Information Studies

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Kóta, Fülöp

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Technology and Bionics,
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Zsedrovits, Tamás

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University

Nagy, Zoltán

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Technical Program for Thursday June 13, 2019

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Co-Chair: Choi, Youngjun	Georgia Institute of Technology
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Darbha, Swaroop	Texas A & M Univ
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Manyam, Satyanarayana Gupta	Infoscitex Corporation
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Kalyanam, Krishna	PARC
Manyam, Satyanarayana Gupta	Infoscitex Corporation
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10:20-10:40	ThA2.2
<i>Multi-UAV Based Autonomous Wilderness Search and Rescue Using Target Iso-Probability Curves</i> , pp. 628-635.	
Kashino, Zendai	University of Toronto
Nejat, Goldie	University of Toronto
Benhabib, Beno	University of Toronto
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10:40-11:00	ThA2.3
<i>Cooperative Load Transportation Using Three Quadrotors</i> , pp. 636-642.	
Pizetta, Igor	Federal University of Espirito Santo
Brandao, Alexandre Santos	Federal University of Vicosa
Sarcinelli-Filho, Mário	Federal University of Espirito Santo
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11:00-11:20	ThA2.4
<i>Colored-Noise Tracking of Floating Objects Using UAVs with Thermal Cameras</i> , pp. 643-652.	
Helgesen, Haakon Hagen	Norwegian University of Science and Technology
Stendahl Leira, Frederik	Norwegian University of Science and Technology
Johansen, Tor Arne	Norwegian University of Science and Technology
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11:20-11:40	ThA2.5
<i>A Solution for Searching and Monitoring Forest Fires Based on Multiple UAVs</i> , pp. 653-658.	
Zhang, Yintao	Concordia University

Zhang, Youmin Yu, Ziquan	Concordia University Northwestern Polytechnical University	Zambrano-Robledo, Patricia Garcia Salazar, Octavio	CIIIA-FIME-UANL CIIIA-FIME-UANL
11:40-12:00	ThA2.6	11:40-12:00	ThA3.6
<i>Anomaly Detection and Cognizant Path Planning for Surveillance Operations Using Aerial Robots</i> , pp. 659-665.		<i>Model Based Roll Controller Tuning and Frequency Domain Analysis for a Flying-Wing UAS</i> , pp. 713-720.	
Dang, Tung	University of Nevada, Reno	Flanagan, Harold	University of Kansas
Khattak, Shehryar	University of Nevada, Reno	Chao, Haiyang	University of Kansas
Papachristos, Christos	University of Nevada Reno	Hagerott, Steven G.	Textron Aviation
Alexis, Kostas	University of Nevada, Reno		
ThA3	Heritage A	ThA4	Savannah
Micro and Mini UAS (Regular Session)		Energy Efficient UAS (Regular Session)	
Chair: Chao, Haiyang	University of Kansas	Chair: Ollero, Anibal	Universidad De Sevilla
Co-Chair: Kanistras Kostas	U of Alabama, Huntsville	Co-Chair: Bezzo, Nicola	University of Virginia
10:00-10:20	ThA3.1	10:00-10:20	ThA4.1
<i>A Novel Quadcopter with a Tilting Frame Using Parallel Link Mechanism</i> , pp. 666-675.		<i>A Simple Model for Gliding and Low-Amplitude Flapping Flight of a Bio-Inspired UAV</i> , pp. 721-729.	
Sakaguchi, Akinori	Osaka University	Martin-Alcántara, Antonio	University of Seville
Takimoto, Takashi	National Institute of Technology, Kitakyushu College	Grau, Pedro	Robotics, Vision and Control Group, University of Seville
Ushio, Toshimitsu	Osaka University	Fernandez-Feria, Ramón	Fluid Mechanics, Andalucía Tech., University of Málaga
		Ollero, Anibal	Universidad De Sevilla
10:20-10:40	ThA3.2	10:20-10:40	ThA4.2
<i>Direct Position Control of an Octarotor Unmanned Vehicle under Wind Gust Disturbance</i> , pp. 676-683.		<i>Multiphysical Modeling of Energy Dynamics for Multirotor Unmanned Aerial Vehicles</i> , pp. 730-739.	
Baldini, Alessandro	Università Politecnica Delle Marche	Michel, Nicolas	UC Davis
Felicetti, Riccardo	Università Politecnica Delle Marche	Sinha, Anish Kumar	University of California Davis
Freddi, Alessandro	Università Politecnica Delle Marche	Kong, Zhaodan Kong	University of California, Davis
Longhi, Sauro	Università Politecnica Delle Marche	Lin, Xinfan	University of California, Davis
Monteriù, Andrea	Università Politecnica Delle Marche		
10:40-11:00	ThA3.3	10:40-11:00	ThA4.3
<i>Smooth Saturation Function-Based Position and Attitude Tracking of a Quad-Rotorcraft Avoiding Singularity</i> , pp. 684-695.		<i>Propulsion System Modeling for Small Fixed-Wing UAVs</i> , pp. 740-749.	
Dasgupta, Ranjan	Tata Consultancy Services Ltd	Coates, Erlend M.	Norwegian University of Science and Technology
		Wenz, Andreas Wolfgang	Norwegian University of Science and Technology
		Gryte, Kristoffer	Norwegian University of Science and Technology
		Johansen, Tor Arne	Norwegian University of Science and Technology
11:00-11:20	ThA3.4	11:00-11:20	ThA4.4
<i>Error-State LQR Control of a Multirotor UAV</i> , pp. 696-703.		<i>Grid-Based Coverage Path Planning with Minimum Energy Over Irregular-Shaped Areas with UAVs</i> , pp. 750-759.	
Farrell, Michael David	Brigham Young University	Cabreira, Tauã	Universidade Federal De Pelotas
Jackson, James	Brigham Young University	Di Franco, Carmelo	University of Virginia
Nielsen, Jerel	Utah State University	Ferreira Jr., Paulo R.	Universidade Federal De Pelotas
Bidstrup, Craig	Brigham Young University	Buttazzo, Giorgio	Scuola Superiore Sant 'Anna
McLain, Timothy W.	Brigham Young University		
11:20-11:40	ThA3.5	11:20-11:40	ThA4.5
<i>A Fuzzy Gain Scheduling Control Algorithm for Formation Flight of Multi-UAVs</i> , pp. 704-712.		<i>Exploiting Ground and Ceiling Effects on Autonomous UAV Motion Planning</i> , pp. 760-769.	
Rojo Rodriguez, Erik Gilberto	Universidad Autonoma De Nuevo Leon	Gao, Shijie	University of Virginia
Ollervides Vazquez, Edmundo Javier	CIIIA-FIME-UANL; TecNM-Instituto Tecnologico De La Laguna	Di Franco, Carmelo	University of Virginia

Carter, Darius	University of Virginia
Quinn, Daniel	University of Virginia
Bezzo, Nicola	University of Virginia
11:40-12:00	ThA4.6

Mission Planning Strategy for Multirotor UAV Based on Flight Endurance Estimation, pp. 770-778.

Schacht Rodríguez, Ricardo	Centro Nacional De Investigacion Y Desarrollo Tecnológico
Ponsart, Jean-Christophe	Université De Lorraine
Garcia Beltran, Carlos Daniel	Centro Nacional De Investigación Y Desarrollo Tecnológico
Astorga-Zaragoza, Carlos	Tecnológico Nacional De México - Cenidet
Theilliol, Didier	University of Lorraine

ThB1 Heritage B

Path Planning IV (Regular Session)

Chair: Morrison, James R.	KAIST
Co-Chair: Ahmadian, Navid	University of Houston

13:30-13:50	ThB1.1
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A Study on 3D Optimal Path Planning for Quadcopter UAV Based on D Lite*, pp. 779-785.

Kim, Hyowon	Pusan National University
Jeong, Jinseok	Pusan National University
Kim, Namyool	Pusan National University
Kang, Beomsoo	Pusan National University

13:50-14:10	ThB1.2
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Collision-Free Multi-UAV Flight Scheduling for Power Network Damage Assessment, pp. 786-790.

Ahmadian, Navid	University of Houston
Lim, Gino	University of Houston
Torabbeigi, Maryam	University of Houston
Kim, Seon Jin	Republic of Korea Army

14:10-14:30	ThB1.3
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Multi-UAS Path-Planning for a Large-Scale Disjoint Disaster Management, pp. 791-799.

Choi, Younghoon	Georgia Institute of Technology
Choi, Youngjun	Georgia Institute of Technology
Briceno, Simon	Georgia Tech
Mavris, Dimitri	Georgia Institute of Technology

14:30-14:50	ThB1.4
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A UAV Resolution and Waveband Aware Path Planning for Onion Irrigation Treatments Inference, pp. 800-804.

Niu, Haoyu	UC, Merced
Zhao, Tiebiao	MESA LAB at UC Merced
Wang, Dong	USDA ARS Parlier
Chen, YangQuan	University of California, Merced

14:50-15:10	ThB1.5
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Data Quality Aware Flight Mission Design for Fugitive Methane Sniffing Using Fixed Wing SUAS, pp. 805-810.

Hollenbeck, Derek	MESA Lab at UC Merced
Dahra, Moataz	MESA Lab at UC Merced
Christensen, Lance	JPL
Chen, YangQuan	University of California, Merced

15:10-15:30	ThB1.6
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A Unified Framework for Reliable Multi-Drone Tasking in Emergency Response Missions, pp. 811-819.

Terzi, Maria	KIOS Research and Innovation Center of Excellence, University of Cyprus
Kolios, Panayiotis	University of Cyprus
Panayiotou, Christos	University of Cyprus
Theocharides, Theocharis	University of Cyprus

ThB2 Heritage C

UAS Applications IV (Regular Session)

Chair: Quagliotti, Fulvia	Politecnico Di Torino
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13:30-13:50	ThB2.1
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Patrolling a Terrain with Cooperative UAVs Using Random Walks, pp. 820-829.

Caraballo de la Cruz, Luis Evaristo	University of Seville
Díaz-Báñez, José-Miguel	University of Seville
Fabila-Monroy, Ruy	CINVESTAV
Hidalgo-Toscano, Carlos	CINVESTAV

13:50-14:10	ThB2.2
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Rapid and Automated Urban Modeling Techniques for UAS Applications, pp. 830-839.

Choi, Youngjun	Georgia Institute of Technology
Pate, David	Research Engineer
Briceno, Simon	Georgia Tech
Mavris, Dimitri	Georgia Institute of Technology

14:10-14:30	ThB2.3
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Communication Technology for Unmanned Aerial Vehicles: A Qualitative Assessment and Application to Precision Agriculture, pp. 840-847.

Neji, Najett	Université Paris Saclay
Mostfa, Tumader	Université Paris Saclay

14:30-14:50	ThB2.4
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UAVs at Your Service: Towards IoT Integration with HAMSTER, pp. 848-857.

Rodrigues, Mariana	Universidade De São Paulo
Branco, Kalinka Regina	University of São Paulo
Lucas Jaquie Castelo	

14:50-15:10	ThB2.5
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Urban Monitoring of Smart Communities Using UAS, pp. 858-865.

Pannozi, Pierluigi	Polytechnic University of Turin
Valavanis, Kimon	University of Denver

Rutherford, Matthew	University of Denver
Guglieri, Giorgio	Politecnico Di Torino
Scanavino, Matteo	Politecnico Di Torino
Quagliotti, Fulvia	Politecnico Di Torino

ThB3		Heritage A
Sensor Fusion I (Regular Session)		
Chair: Pereira, Guilherme		West Virginia University
13:30-13:50	ThB3.1	
<i>Increasing Perception Space of a Ground Standing Robot Via Data Transmission from an Aerial Robot</i> , pp. 866-874.		
Sohn, Kiwon	University of Hartford	
Murshid, Mohammad	University of Hartford	
13:50-14:10	ThB3.2	
<i>Perceptual Ability Advancement of a Humanoid with Limited Sensors Via Data Transmission from an Aerial Robot</i> , pp. 875-881.		
Sohn, Kiwon	University of Hartford	
Murshid, Mohammad	University of Hartford	
14:10-14:30	ThB3.3	
<i>State Estimation for Aerial Vehicles in Forest Environments</i> , pp. 882-890.		
Chiella, Antonio Carlos	Federal University of Minas Gerais	
Bana Chiella	Federal University of Minas Gerais	
Teixeira, Bruno Otávio S.	Federal University of Minas Gerais	
Pereira, Guilherme	West Virginia University	
14:30-14:50	ThB3.4	
<i>Deep Learning Based Semantic Situation Awareness System for Multirotor Aerial Robots Using LIDAR</i> , pp. 891-900.		
Sanchez-Lopez, Jose Luis	SnT, University of Luxembourg	
Sampedro, Carlos	University of Luxembourg	
Cazzato, Dario	Interdisciplinary Centre for Security, Reliability and Trust	
Voos, Holger	University of Luxembourg	
14:50-15:10	ThB3.5	
<i>Networked Radar Systems for Cooperative Tracking of UAVs</i> , pp. 901-907.		
Anderson, Brady	Brigham Young University	
Ellingson, Jaron	Brigham Young University	
Eyler, Michael	Brigham Young University	
Buck, David	Brigham Young University	
Peterson, Cameron	Brigham Young University	
McLain, Timothy W.	Brigham Young University	
Warnick, Karl	Brigham Young University	
15:10-15:30	ThB3.6	
<i>Depth Map Estimation Methodology for Detecting Free-Obstacle Navigation Areas</i> , pp. 908-914.		
Trejo, Sergio Marcelino	Centro De Investigaciones En Optica	
Martínez, Karla	Centro De Investigaciones En Optica	
Flores, Gerardo	Center for Research in Optics	

ThB4		Savannah
Airspace Management (Regular Session)		
Chair: Ko, Woo-Hyun		Texas A&M University
13:30-13:50	ThB4.1	
<i>Optimum Design for Drone Highway Network</i> , pp. 915-921.		
Hamanaka, Masatoshi	RIKEN	
13:50-14:10	ThB4.2	
<i>Distributed Bidding-Based Detect-And-Avoid for Multiple Unmanned Aerial Vehicles in National Airspace</i> , pp. 922-928.		
Scott, Drew	University of Cincinnati	
Radmanesh, Mohammadreza	University of Cincinnati	
Sarim, Mohammad	University of Cincinnati	
Deshpande, Aditya	University of Cincinnati	
Kumar, Manish	University of Cincinnati	
Pragada, Ravikumar	InterDigital Communications	
14:10-14:30	ThB4.3	
<i>A Lane-Based Approach for Large-Scale Strategic Conflict Management for UAS Service Suppliers</i> , pp. 929-937.		
Sacharny, David	University of Utah	
Henderson, Thomas	University of Utah	
14:30-14:50	ThB4.4	
<i>Probability-Based Collision Detection and Resolution of Planned Trajectories for Unmanned Aircraft System Traffic Management</i> , pp. 938-943.		
Ko, Woo-Hyun	Texas A&M University	
Kumar, P. R.	TAMU	
14:50-15:10	ThB4.5	
<i>Evolutionary Optimization-Based Mission Planning for UAS Traffic Management (UTM)</i> , pp. 944-950.		
Tan, Qingyu	Air Traffic Management Research Institute	
Wang, Zenkun	Nanyang Technological University	
Yew Soon, Ong	Nanyang Technological University	
Low, Kin Huat	Nanyang Technological University	
15:10-15:30	ThB4.6	
<i>Enable UAVs Safely Flight in Low-Altitude: A Preliminary Research of the Public Air Route Network of UAVs</i> , pp. 951-956.		
Liao, Xiaohan	Institute of Geographic Science and Natural Resources Research,	
Xu, Chenchen	Institute of Geographic Sciences and Natural Resources Research,	
Yue, Huanyin	Institute of Geographic Science and Natural Resources Research,	
ThC1		Heritage B
See-And-Avoid Systems (Regular Session)		

Chair: Briese, Christoph	Deutsches Zentrum Für Luft Und Raumfahrt E.V
16:00-16:20	ThC1.1
<i>Below Horizon Aircraft Detection Using Deep Learning for Vision-Based Sense and Avoid</i> , pp. 957-962.	
James, Jasmin	Queensland University of Technology
Ford, Jason	Queensland University of Technology
Molloy, Timothy L.	Queensland University of Technology
16:20-16:40	ThC1.2
<i>High-Speed Obstacle-Avoidance with Agile Fixed-Wing Aircraft</i> , pp. 963-972.	
Bulka, Eitan	McGill University
Nahon, Meyer	McGill University
16:40-17:00	ThC1.3
<i>Deep Learning with Semi-Synthetic Training Images for Detection of Non-Cooperative UAVs</i> , pp. 973-980.	
Briese, Christoph	Deutsches Zentrum Für Luft Und Raumfahrt E.V
Günther, Lukas	Deutsches Zentrum Für Luft Und Raumfahrt E.V
17:00-17:20	ThC1.4
<i>Flight Test Validation of Collision Avoidance System for a Multicopter Using Stereoscopic Vision</i> , pp. 981-987.	
Ma, Demetria	California State Polytechnic University, Pomona
Tran, Alex	University
Keti, Nick	California Polytechnic University, Pomona
Yanagi, Ryan	Cal Poly Pomona
Knight, Peter	Cal Poly Pomona
Joglekar, Kedar	Cal Poly Pomona
Tudor, Nicholas	California State Polytechnic University, Pomona
Cresta, Burt	California Polytechnic State University Pomona
Bhandari, Subodh	California State Polytechnic University
17:20-17:40	ThC1.5
<i>Three-Dimensional (3D) Dynamic Obstacle Perception in a Detect-And-Avoid Framework for Unmanned Aerial Vehicles</i> , pp. 988-996.	
Lim, Catrina	Nanyang Technological University
Li, Boyang	Nanyang Technological University
Ng, Ee Meng	Nanyang Technological University
LIU, XIN	Nanyang Technological University
Low, Kin Huat	Nanyang Technological University

ThC2	Heritage C
UAS Applications V (Regular Session)	

Chair: Peterson, Cameron	Brigham Young University
Co-Chair: Brandao, Alexandre Santos	Federal University of Vicosa
16:00-16:20	ThC2.1
<i>The Urban Last Mile Problem: Autonomous Drone Delivery to Your Balcony</i> , pp. 997-1004.	
Brunner, Gino	ETH Zurich
Szebedy, Bence	ETH Zurich
Tanner, Simon	ETH Zurich
Wattenhofer, Roger	ETH Zurich
16:20-16:40	ThC2.2
<i>Real-Time Single Object Detection on the UAV</i> , pp. 1005-1014.	
Wu, Hsiang-Huang	Prairie View A&M University
16:40-17:00	ThC2.3
<i>Gesture Commands for Controlling High-Level UAV Behavior</i> , pp. 1015-1022.	
Akagi, John	Brigham Young University
Moon, Brady	Brigham Young University
Chen, Xingguang	Sun Yat-Sen University
Peterson, Cameron	Brigham Young University
17:00-17:20	ThC2.4
<i>UAS-Based Crack Detection Using Stereo Cameras: A Comparative Study</i> , pp. 1023-1027.	
Benkhoui, Yasmina	Worcester Polytechnic Institute
Reinhold, Ludwig	Worcester Polytechnic Institute
El Korchi, Tahar	Worcester Polytechnic Institute
17:20-17:40	ThC2.5
<i>Rod-Shaped Payload Transportation Using Multiple Quadrotors</i> , pp. 1028-1032.	
Villa, Daniel Khede Dourado	Federal University of Espírito Santo
Brandao, Alexandre Santos	Federal University of Vicosa
Sarcinelli-Filho, Mário	Federal University of Espírito Santo

ThC3	Heritage A
Sensor Fusion II (Regular Session)	
Chair: Sun, Liang	New Mexico State University
16:00-16:20	ThC3.1
<i>Observability Analysis and Bayesian Filtering for Self-Localization of a Tethered Multicopter in GPS-Denied Environments</i> , pp. 1033-1039.	
Al-Radaideh, Amer	New Mexico State University
Sun, Liang	New Mexico State University
16:20-16:40	ThC3.2
<i>An Estimation-Domain Approach to MEMS Multi-IMU Fusion for SUAS</i> , pp. 1040-1045.	
Givens, Matthew	Utah State University
Coopmans, Calvin	Utah State University
Christensen, Randall	Utah State University

16:40-17:00 ThC3.3

A Survey of Inertial Sensor Fusion: Applications in sUAS Navigation and Data Collection, pp. 1046-1052.

Givens, Matthew Utah State University
Coopmans, Calvin Utah State University

17:00-17:20 ThC3.4

Robust Thermal-Inertial Localization for Aerial Robots: A Case for Direct Methods, pp. 1053-1060.

Khattak, Shehryar University of Nevada, Reno
Mascarich, Frank University of Nevada, Reno
Dang, Tung University of Nevada, Reno
Papachristos, Christos University of Nevada Reno
Alexis, Kostas University of Nevada, Reno

17:20-17:40 ThC3.5

A Software in the Loop (SIL) Kalman and Complementary Filter Implementation on X-Plane for UAVs, pp. 1061-1068.

Michailidis, Michail University of Denver
Agha, Mohammed University of Denver
Rutherford, Matthew University of Denver
Valavanis, Kimon University of Denver

ThC4 Savannah
Airspace Control (Regular Session)

Chair: Uchiyama, Kenji Nihon University

16:00-16:20 ThC4.1

Linear Quadratic Formulation of the Target Defense Differential Game, pp. 1069-1075.

Pachter, Meir AFIT/ENG
Casbeer, David Air Force Research Laboratories
Garcia, Eloy AFRL

16:20-16:40 ThC4.2

Robust Trajectory Tracking for UAS: Dynamics Sliding Mode Approach, pp. 1081-1088.

Reynoso, Martin UPP
Ramos-Velasco, Luis Universidad Politécnica
Enrique Metropolitana De Hidalgo,
México
Garcia-Rodriguez, Rodolfo Metropolitan Polytechnic
University of Hidalgo

16:40-17:00 ThC4.3

Controller Design Using Backstepping Algorithm for Fixed-Wing UAV with Thrust Vectoring System, pp. 1084-1088.

Hirano, Shogo Nihon University
Uchiyama, Kenji Nihon University
Masuda, Kai Nihon University

17:00-17:20 ThC4.4

*Enhanced Hover-Mode Control of a Quad-Rotor Aircraft System Based on Nested Saturation Scheme**.

Gonzalez-Hernandez, Ivan Cinvestav – IPN
Hernandez, Jorge Luis CINVESTAV IPN
Vazquez-Nicolas, Jesus Cinvestav – IPN
Manuel

Lozano, Rogelio

University of Technology of
Compiègne

17:20-17:40 ThC4.5

Least Square Policy Iteration for IBVS Based Dynamic Target Tracking, pp. 1089-1098.

Srivastava, Raunak Indian Institute of Technology
Bombay
Lima, Rolif TCS Innovation Labs
Das, Kaushik TATA Consultancy Service
Maity, Arnab Indian Institute of Technology
Bombay

Technical Program for Friday June 14, 2019

FrA1	Heritage B
UAV Design (Regular Session)	
Chair: Cawthorne, Dylan	University of Southern Denmark
Co-Chair: Kim, Yongjae	Agency for Defense Development
09:00-09:20	FrA1.1
<i>Design and Shape Optimization of Unmanned, Semi-Rigid Airship for Rapid Descent Using Hybrid Genetic Algorithm</i> , pp. 1099-1107.	
Singh, Vinay	University of Ottawa
Lanteigne, Eric	University of Ottawa
09:20-09:40	FrA1.2
<i>Preliminary Design, Modeling and Control of a Fully Actuated Quadrotor UAV</i> , pp. 1108-1116.	
Nigro, Michelangelo	Università Degli Studi Della Basilicata
Pierri, Francesco	Università Degli Studi Della Basilicata
Caccavale, Fabrizio	Università Degli Studi Della Basilicata
09:40-10:00	FrA1.3
<i>Value Sensitive Design of a Humanitarian Cargo Drone</i> , pp. 1117-1125.	
Cawthorne, Dylan	University of Southern Denmark
Cenci, Alessandra	University of Southern Denmark, Department of Philosophy, Instit
10:00-10:20	FrA1.4
<i>Design of a Class I Unmanned Aircraft for Maritime Surveillance</i> , pp. 1126-1135.	
Franco, Vasco	Academia Da Força Aérea Portuguesa
Correia, João	Academia Da Força Aérea Portuguesa
Caetano, Joao Vieira	Portuguese Air Force Research Center
Félix, Luís	Academia Da Força Aérea Portuguesa
10:20-10:40	FrA1.5
<i>Design Methodology of a Small Unmanned Airship with Optimized Fins</i> , pp. 1136-1142.	
Suvarna, Sohan	IITB-Monash Research Academy
Chung, Hoam	Monash University
Pant, Rajkumar	Indian Institute of Technology-Bombay
10:40-11:00	FrA1.6
<i>Optimal Guidance for Range Maximization of Guided Projectile: The Effects of Autopilot Delay and Fin Deployment Timing on the Flight Range</i> , pp. 1143-1152.	
Kim, Yongjae	Agency for Defense Development
Kim, Gyeong Hun	Agency for Defense

Choi, Jae-Hyun	Development Agency for Defense Development
FrA2	Heritage A
Autonomy I (Regular Session)	
Chair: Bezzo, Nicola	University of Virginia
09:00-09:20	FrA2.1
<i>Singular Trajectories in the Two Pursuer One Evader Differential Game</i> , pp. 1153-1160.	
Pachter, Meir	AFIT/ENG
Von Moll, Alexander	Air Force Research Laboratory
Garcia, Eloy	AFRL
Casbeer, David	Air Force Research Laboratories
Milutinovic, Dejan	University of California at Santa Cruz
09:20-09:40	FrA2.2
<i>A K Nearest Neighborhood Based Wind Estimation for Rotary-Wing VTOL UAVs*</i> .	
Wang, Liyang	Rutgers, The State University of New Jersey
Misra, Gaurav	Rutgers, The State University of New Jersey
Bai, Xiaoli	Rutgers, The State University of New Jersey
09:40-10:00	FrA2.3
<i>Deep RC: Enabling Remote Control through Deep Learning</i> , pp. 1161-1167.	
Ellingson, Jaron	Brigham Young University
Ellingson, Gary	Brigham Young University
McLain, Timothy W.	Brigham Young University
10:00-10:20	FrA2.4
<i>Parameter-Free Regression-Based Autonomous Control of Off-The-Shelf Quadrotor UAVs</i> , pp. 1168-1177.	
Peddi, Rahul	University of Virginia
Bezzo, Nicola	University of Virginia
10:20-10:40	FrA2.5
<i>Towards Breaching a Still Water Surface with a Miniature Unmanned Aerial-Underwater Vehicle</i> , pp. 1178-1185.	
Zha, Jiaming	UC Berkeley
Thacher, Eric William	UC Berkeley
Kroeger, Joseph	University of California, Berkeley
Makiharju, Simo	UC Berkeley
Mueller, Mark Wilfried	UC Berkeley
10:40-11:00	FrA2.6
<i>A Vision-Based Unmanned Aircraft System for Autonomous Grasp & Transport</i> , pp. 1186-1193.	
Liu, Xu	Shenyang Institute of Automation, Chinese Academy of Sciences
He, Yuqing	Shenyang Institute of Automation, CAS, P. R. China
Chen, Bo	Shenyang Institute of Automation Chinese Academy

Hou, Yongqiang
Bi, Kaiyuan
Li, Decai

of Sciences
Northeastern University
Shenyang Jianzhu University
Institute of Automation
Chinese, Chinese Academy of
Sciences

FrA3 Heritage C
UAS Navigation I (Regular Session)

Chair: Campoy, Pascual Universidad Politecnica Madrid
Co-Chair: Huang, Sunan National University of Singapore

09:00-09:20 FrA3.1

Visual Controllers for Relative Positioning in Indoor Settings, pp. 1194-1200.

Mejias Alvarez, Luis Queensland University of Technology
Campoy, Pascual Universidad Politecnica Madrid

09:20-09:40 FrA3.2

Towards Automated Under-Canopy Exploration of Plantation Forests, pp. 1201-1208.

Lin, Tzu-Jui University of Auckland
Stol, Karl University of Auckland

09:40-10:00 FrA3.3

Laser-Based Collision Avoidance and Reactive Navigation Using RRT and Signed Distance Field for Multirotor UAVs*, pp. 1209-1217.

Lu, Liang Technical University of Madrid (UPM-CSIC)
Sampedro, Carlos University
Rodriguez-Vazquez, Javier Universidad Politecnica De Madrid
Campoy, Pascual Universidad Politecnica Madrid

10:00-10:20 FrA3.4

Computationally Efficient Visibility Graph--Based Generation of 3D Shortest Collision-Free Path among Polyhedral Obstacles for Unmanned Aerial Vehicles, pp. 1218-1223.

Huang, Sunan National University of Singapore
Teo, Rodney Temasek Laboratories, National University of Singapore

10:20-10:40 FrA3.5

A Cloud-Based Framework for Intelligent Navigation and Coordination for UASs in Urban Areas, pp. 1224-1233.

Primatesta, Stefano Politecnico Di Torino
Bloise, Nicoletta Politecnico Di Torino
Antonini, Roberto Company
Fici, Gian Piero TIM
Gaspardone, Marco TIM
Guglieri, Giorgio Politecnico Di Torino
Rizzo, Alessandro Politecnico Di Torino

10:40-11:00 FrA3.6

A Carrot in Probabilistic Grid Approach for Quadrotor Line Following on Vertical Surfaces, pp. 1234-1241.

Liu, Jyi-Shane National Chengchi University
LEE, Gong-Yi National Chengchi University

FrA4 Savannah
Environmental Issues (Regular Session)

Co-Chair: Chen, YangQuan University of California, Merced

09:00-09:20 FrA4.1

Visual Servoing for Multirotor Precision Landing in Daylight and After-Dark Conditions, pp. 1242-1248.

Wynn, Jesse S. Lawrence Livermore National Laboratory
McLain, Timothy W. Brigham Young University

09:20-09:40 FrA4.2

Pitch and Roll Effects of On-Board Wind Measurements Using SUAS, pp. 1249-1254.

Hollenbeck, Derek MESA Lab at UC Merced
Oyama, Madoka MESA Lab at UC Merced
Garcia, Andrew MESA Lab at UC Merced
Chen, YangQuan University of California, Merced

09:40-10:00 FrA4.3

Hybrid AutoGyro: Airborne Wind Energy Conversion Using Autorotation, pp. 1255-1260.

Flores, Jonathan Umi Lafmia Cinvestav
Salazar, Sergio Umi Lafmia Cinvestav
Lozano, Rogelio University of Technology of Compiègne

10:00-10:20 FrA4.4

Modeling of Aerodynamic Disturbances for Proximity Flight of Multirotors, pp. 1261-1269.

Jain, Karan University of California, Berkeley
Fortmuller, Trey University of California, Berkeley
Byun, Jaeseung UC Berkeley
Makiharju, Simo UC Berkeley
Mueller, Mark Wilfried UC Berkeley

10:20-10:40 FrA4.5

Wildfire Monitoring with Uneven Importance Using Multiple Unmanned Aircraft Systems, pp. 1270-1279.

Hu, Xiaolin Georgia State University
Bent, John Georgia State University
Sun, Jiawei Georgia State University

10:40-11:00 FrA4.6

Asymptotic Stability Controller Design of Three Fixed-Wing UAVs Formation with Windy Field, pp. 1280-1285.

Pu, Zhang Northwestern Polytechnical University
Huifeng, Xue School of Automation, Northwestern Polytechnical

Shan, Gao	University School of Automation, Northwestern Polytechnical University	11:30-11:50	FrB2.1
FrB1 Risk Analysis and Risk-Based Methods for UAS (Invited Session)		<i>Radius of Turn and Flight Path Angle Estimation from Unmanned Aircraft Flight Trajectories</i> , pp. 1336-1343.	
Chair: Bertrand, Sylvain	ONERA	Benders, Sebastian	DLR Braunschweig
Co-Chair: la Cour-Harbo, Anders	Aalborg University	Koch, Simon	Bundeswehr University Munich
Organizer: Bertrand, Sylvain	ONERA		
Organizer: la Cour-Harbo, Anders	Aalborg University		
11:30-11:50	FrB1.1	11:50-12:10	FrB2.2
<i>Feasibility Analysis of UAV Operations for Monitoring of Infrastructure Networks: A Risk-Based Approach (I)</i> , pp. 1286-1295.		<i>A Convolutional Neural Network Vision System Approach to Indoor Autonomous Quadrotor Navigation</i> , pp. 1344-1352.	
Bertrand, Sylvain	ONERA	Garcia, Adriano	Binghamton University
Raballand, Nicolas	ONERA	Mittal, Sandeep	Binghamton University
Lala, Stephanie	ONERA	Kiewra, Edward	SUNY Binghamton
Flavien, Viguier	SNCF Réseau	Ghose, Kanad	SUNY-Binghamton, Dept. of Computer Science
11:50-12:10	FrB1.2	12:10-12:30	FrB2.3
<i>Modeling Unmanned Aerial System (UAS) Risks Via Monte-Carlo Simulation (I)</i> , pp. 1296-1305.		<i>Flying through Gates Using a Behavioral Cloning Approach</i> , pp. 1353-1358.	
Rudnick-Cohen, Eliot	University of Maryland, College Park	Rodriguez Hernandez, Erick	Instituto Politecnico Nacional
Herrmann, Jeffrey	University of Maryland	Vasquez-Gomez, Juan Irving	Consejo Nacional De Ciencia Y Tecnologia
Azarm, Shapour	University of Maryland, College Park	Herrera Lozada, Juan Carlos	Instituto Politécnico Nacional
12:10-12:30	FrB1.3	12:30-12:50	FrB2.4
<i>Planning Unmanned Aerial System (UAS) Takeoff Trajectories to Minimize Third-Party Risk (I)</i> , pp. 1306-1315.		<i>Monocular SLAM Position Scale Estimation for Quadrotor Autonomous Navigation</i> , pp. 1359-1364.	
Rudnick-Cohen, Eliot	University of Maryland, College Park	Rodriguez Cortes, Hugo	CINVESTAV-IPN
Azarm, Shapour	University of Maryland, College Park	Gómez-Casasola, Alejandro	CINVESTAV
Herrmann, Jeffrey	University of Maryland	Luis Daniel, Nieto-Hernandez	CINVESTAV-IPN
12:30-12:50	FrB1.4	12:50-13:10	FrB2.5
<i>Compromising Flight Paths of Autopiloted Drones</i> , pp. 1316-1325.		<i>Gaussian Mixture Model (GMM) Based Dynamic Object Detection and Tracking</i> , pp. 1365-1371.	
Chen, Wenxin	University of Hawaii	Hariharan Anand, Vishnu	TATA COnsultancy Services
Dong, Yingfei	University of Hawaii	Pushp, Durgakant	TATA COnsultancy Services
Duan, Zhenhai	Florida State University	Raj, Rishin	TCS Research and Innovation Labs
12:50-13:10	FrB1.5	Das, Kaushik	TATA Consultancy Service
<i>Safe Decision Making for Risk Mitigation of UAS (I)</i> , pp. 1326-1335.		13:10-13:30	FrB2.6
Castano, Lina	University of Maryland, College Park	<i>Towards a Weather Analysis Software Framework to Improve UAS Operational Safety</i> , pp. 1372-1380.	
Xu, Huan	University of Maryland	Lundby, Tobias	University of Southern Denmark
FrB2 Autonomy II (Regular Session)		Christiansen, Martin Peter	University of Southern Denmark
Chair: Rodriguez Cortes, Hugo	CINVESTAV-IPN	Jensen, Kjeld	University of Southern Denmark
FrB3 UAS Navigation II (Regular Session)		Heritage C	
Chair: Fossen, Thor I.		Norwegian Univ. of Sci and Technology	
11:30-11:50	FrB3.1	<i>Approximating UAV and Vision Feature Point Correlations</i>	

in a Simplified SLAM Problem, pp. 1381-1388.

Lewis, Jeffrey Georgia Institute of Technology
Johnson, Eric Pennsylvania State University

11:50-12:10 FrB3.2

Null Space Based Formation Control for a UAV Landing on a UGV, pp. 1389-1397.

Mafra Moreira, Mauro Federal University of Espírito Santo
Sergio
Brandao, Alexandre Federal University of Vicosa Santos
Sarcinelli-Filho, Mário Federal University of Espirito Santo

12:10-12:30 FrB3.3

Field Test Results of GNSS-Denied Inertial Navigation Aided by Phased-Array Radio Systems for UAVs, pp. 1398-1406.

Gryte, Kristoffer Norwegian University of Science and Technology
Bryne, Torleiv Håland Norwegian Univ. of Science and Technology
Albrektsen, Sigurd M SINTEF Digital
Johansen, Tor Arne Norwegian University of Science and Technology

12:30-12:50 FrB3.4

UAV Based Survivor Search During Floods, pp. 1407-1415.

Ravichandran, Rahul Indian Institute of Science, Bangalore
Ghose, Debasish Indian Institute of Science
Das, Kaushik TATA Consultancy Service

12:50-13:10 FrB3.5

Robust Navigation System for UAVs in GNSS and Magnetometer-Denied Environments, pp. 1416-1424.

Mathisen, Paal Holthe Norwegian University of Science and Technology
Fossen, Thor I. Norwegian University of Science and Technology

13:10-13:30 FrB3.6

Pose Estimation of UAVs Based on INS Aided by Two Independent Low-Cost GNSS Receivers, pp. 1425-1435.

Sollie, Martin Lysvand The Norwegian University of Science and Technology
Bryne, Torleiv Håland Norwegian Univ. of Science and Technology
Johansen, Tor Arne Norwegian University of Science and Technology

FrB4 Savannah
UAS Testbeds (Regular Session)

Chair: Theilliol, Didier University of Lorraine
Co-Chair: Ahmad, Shakeeb University of New Mexico

11:30-11:50 FrB4.1

A New Facility for UAV Testing in Climate-Controlled Environments, pp. 1436-1444.

Scanavino, Matteo Politecnico Di Torino

Vilardi, Andrea Eurac Research
Guglieri, Giorgio Politecnico Di Torino

11:50-12:10 FrB4.2

Pitching Moment Analysis and Adjustment for Tilt-Wing UAV in VTOL Mode, pp. 1445-1450.

Sanchez-Rivera, Luz Umi Lafmia Cinvestav
Lozano, Rogelio University of Technology of Compiègne
Arias Montano, Alfredo IPN ESIME Ticoman

12:10-12:30 FrB4.3

Control of a PVTOL with Tilting Rotors, pp. 1451-1457.

Offermann, Alexis Heudiasyc Lab. 7253, Université De Technologie De Compiègne
Castillo, Pedro Université De Technologie De Compiègne
De Miras, Jérôme Université De Technologie De Compiègne

12:30-12:50 FrB4.4

A Full Distributed Multipurpose Autonomous Flight System Using 3D Position Tracking and ROS, pp. 1458-1466.

Gargioni, Gustavo Virginia Polytechnic Institute and State University
Peterson, Marco Virginia Polytechnic Institute and State University
Persons, Jeffrey Virginia Polytechnic Institute and State University
Schroeder, Kevin Virginia Polytechnic Institute and State University
Black, Jonathan Virginia Polytechnic Institute and State University

12:50-13:10 FrB4.5

Real-Time Quadrotor Navigation through Planning in Depth Space in Unstructured Environments, pp. 1467-1476.

Ahmad, Shakeeb University of New Mexico
Fierro, Rafael University of New Mexico

13:10-13:30 FrB4.6

ROS-MAGNA, a ROS-Based Framework for the Definition and Management of Multi-UAS Cooperative Missions, pp. 1477-1486.

Millán Romera, José University of Seville
Andrés
Perez-Leon, Hector University of Seville
Castillejo-Calle, Alejandro University of Seville
Maza, Ivan Universidad De Sevilla
Ollero, Anibal Universidad De Sevilla