

4th IAA CONFERENCE ON SPACE SITUATIONAL AWARENESS

2024

May 8-10, 2024

Daytona Beach, FL, USA

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Wednesday, May 8, 2024	
8:00am – 5:00pm	Registration
8:00am – 9:00am	Breakfast
9:00am – 9:30am	Welcome from Chairs, IAA Delegates, and Embry Riddle Aeronautical University
9:30am – 10:30am	Keynote 1: The Imperative for a Multi-National Approach to SSA & Space Sustainability (Roger McNamara, AIAA)
10:30am – 11:00am	Coffee Break
11:00am – 12:40pm	Morning Session – Identification, Estimation, and Tracking
12:40pm – 2:00pm	Lunch
2:00pm – 3:40pm	Afternoon Session I - Debris Removal
3:40pm – 4:00pm	Coffee Break
4:00pm – 5:40pm	Afternoon Session II – Spacecraft GNC
Thursday, May 9, 2024	
8:00am – 4:30pm	Registration
8:00am – 9:00am	Breakfast
9:00am – 10:00am	Keynote 2: From Orbit Determination to Characterization: AI/ML Methods in Space Situational Awareness (Roberto Furfaro, University of Arizona)
10:00am – 10:30am	Coffee Break
10:30am – 12:35pm	Morning Session – Policy and Risk Assessment
12:35pm – 2:00pm	Lunch
2:00pm – 4:05pm	Afternoon Session – Sensing and Forecasting
4:05pm – 4:30pm	Coffee and Networking
4:30pm – 5:30pm	Lab Tour
5:30pm – 7:00pm	Awards Ceremony & Reception
Friday, May 10, 2024	
8:00am – 12:30pm	Registration
7:30am – 8:30am	Breakfast
8:30am – 9:30am	Keynote 3: Keeping Space Clear & Knowing Where It Isn't (Troy Morris, KMI)
9:30am – 10:00am	Coffee Break
10:00am – 12:30pm	Session – Identification and Tracking II
12:30pm – 12:35pm	Farewell & Closing Ceremony

ICSSA 2024 Extended Presentation Schedule

Wednesday, May 8, 2024				
Morning Session				
Session Chair – Troy Henderson				
TOPIC	TIME	TITLE	AUTHORS	ORGANIZATION
Identification, Estimation, and Tracking I	11:00-11:25	Improving Satellite Position and Velocity Calculation During Low Thrust Maneuvers Using Multi-Bistatic Radar and Unscented Kalman Filter	Bhaskar Ahuja*, Luca Gentile, Marco Martorella	The University of Trento
	11:25-11:50	Watch out GEO Satellites, Here's a New ML-Method for Manoeuvre Detection and Intent Classification	Temenuzhka Avramova, Pietro De Marchi, Daniel Oltrogge, Jeff Cornelius, David Vallado, Francesco Caronte, Nadir Casciola	AIKO Space
	11:50 – 12:15	Object Characterization and Attitude Determination Using Data Fusion	K. McNally, A. de Andrés, C. Paulete, M. Torras, D. I. Tirado, A. Gallego, A. M. Antón	GMV
	12:15-12:40	A Convex Optimization-Based Method for Efficient Reconstruction of Continuous Maneuvers	Xingyu Zhou*, Dong Qiao, Xiangyu Li	Beijing Institute of Technology
Afternoon Session I				
Session Chair – Riccardo Bevilacqua				
TOPIC	TIME	TITLE	AUTHORS	ORGANIZATION
Debris Removal	14:00-14:25	Orbital Debris Remediation via Collection Station	Bao-Minh Hoang, Adam Kall	Kall Morris Inc.
	14:25-14:50	Space Debris Detection and Removal Using a Synchronized Network of Telescopes and ADR Equipment Through a Concerted Trace, Track and Tackle Sequence	Muhammad Akbar Hussain, Muhammad Mehdi Hussain, Muhammad Waqar Haider, Muhammad Ayaz Hussain	Southern Cross Outback Observatories Project
	14:50-15:15	Active Debris Removal Using a Space Tug and a Tether Considering Collision Probability	Liqiang Hou, Arun K. Misra, Zilong Zhuang	McGill University

* Zoom Presentation

	15:15 – 15:40	Post Capture Attitude Control for Unknown Debris	Nicolo Woodward, Riccardo Bevilacqua	Embry Riddle Aeronautical University
Afternoon Session II				
Session Chair – Troy Henderson				
Spacecraft GNC	16:00 – 16:25	A Novel Time-Optimal Algorithm for a Drag-Based Targeted Re-Entry	Emanuela Gaglio and Riccardo Bevilacqua	Scuola Superiore Meridionale
	16:25 – 16:50	Optimal Spacecraft Collision Avoidance Using Aerodynamic Drag	Emanuela Gaglio, Constantin Traub, Fabrizio Turco, Jhonathan O. Murcia-Piñeros, Riccardo Bevilacqua and Stefanos Fasoulas	Scuola Superiore Meridionale
	16:50 – 17:15	Development and Implementation of a Novel Fault Tolerant Adaptive Controller for Spacecraft Attitude Control	Andres Perez, Hever Moncayo, Sebastian Leon	Embry Riddle Aeronautical University
	17:15 – 17:40	Generative Learning Model to Spacecraft Attitude Estimation in Proximity	Gabriela Gavilanez, Hever Moncayo	Embry Riddle Aeronautical University
Thursday, May 9, 2024				
Morning Session				
Session Chair – Tarek Elgohary				
TOPIC	TIME	TITLE	AUTHORS	ORGANIZATION
Policy and Risk Assessment	10:30-10:55	Common Sense on Space Traffic Control (STC) Funding	Stuart Eves	SJE Space
	10:55-11:20	Public Company Disclosures of Space-Related Risks	Christopher Geiger, Cwynn Geiger	Lockheed Martin
	11:20-11:45	Japan's National Security Strategy and the Evolution of SSA/SDA Capabilities	Kota Umeda, Kazuto Suzuki, Koichi Kikuchi, Ikuko Kuriyama	Institute of Geoeconomics
	11:45-12:10	A Treatment of the All-Clear Problem for Solar Energetic Particle Events and Subsequent Decision Making	Manolis K. Georgoulis	JHU APL

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	12:10-12:35	Conjunction Analysis Using TLE Predictions Enhanced by ML Approach	Joseph N. Wilhelm, Hao Peng	Embry Riddle Aeronautical University
Afternoon Session Session Chair – Arun Misra				
TOPIC	TIME	TITLE	AUTHORS	ORGANIZATION
Sensing and Forecasting	14:00 – 14:25	LiDAR Space Domain Awareness	F. William Hersman, Michael Briggs, Jan Distelbrink, Jeff Ketel, Steve Ketel, Iulian C. Ruset	LiDAR Space
	14:25 – 14:50	ASTAREON: Capabilities and Performances of MEDOC Radar Station for LEO Survey, Cataloguing and Servicing	Florent Muller, Jocelyn Couetdic, Bruno Dugrosprez, Thomas Advani	ASTAREON
	14:50 – 15:15	Evaluating Different Sensor Tasking Strategies for Object Catalog Build-Up	Manuel Schubert, Christopher Kebschull, Johannes Gelhaus, Simona Silvestri	TU Braunschweig
	15:15 – 15:40	Synthetic Covariance Production Using a New Digital Approach	R.G. Gist, D.L Oltrogge, D., S. Alfano	COMSPOC Corporation
	15:40 – 16:05	Analysis of Aerodynamic Characteristics for the Vehicle in Transition Flow Region Based on a Novel Bridge Function	Ruifeng Lv*, Hongwei Han, Qian Pan	Beijing Institute of Technology
Friday, May 10, 2024				
Morning Session Session Chair – Tarek Elgohary				
TOPIC	TIME	TITLE	AUTHORS	ORGANIZATION
Identification, Estimation, and Tracking II	10:00-10:25	Enhancing Space Situational Awareness to Mitigate Risk: A Case Study in the Misidentification of Starlink Satellites as UAP in Commercial Aviation	Douglas J. Buettner, Richard E. Griffiths, Nick Snell, John Stillely	University of Utah
	10:25-10:50	Analysis of Non-Linear Orbit Determination in the Cislunar Region Using the Linearized State Transition Matrix	Seur Gi Jo, David Canales	Embry Riddle Aeronautical University

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	10:50-11:15	Dual Quaternion-Based Kalman-Bucy Filter for Optimal Relative Pose Estimation	Ryan Kinzie, Pol Fontdegloria Balaguer, Riccardo Bevilacqua, Sergey Drakunov, Dongeun Seo, John W. Conklin, Peter J. Wass	Embry Riddle Aeronautical University
	11:15 – 11:40	Lunar Particle Trajectory Estimation from Rocket Impingement	Nicola-Isabella Ruiz, Daniel Lopez, Troy Henderson	Embry Riddle Aeronautical University
	11:40 – 12:05	Neural Network to Predict Hypervelocity Fragment Flyout from Satellite Explosion Breakup Events	Katharine E. Larsen, Tahsinul Haque Tasif, Riccardo Bevilacqua	Embry Riddle Aeronautical University
	12:05 – 12:30	Orbit Determination for a Non-Cooperative Target Considering Navigation Error of Observation Platform Based on Random Noise Model	Jiating Su, Lixuan He, Jiayi Li, Xiucong Sun	BUAA

* Zoom Presentation