

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	Thomas Schildknecht, Christophe Paccolat, Peter Pessev, Palash Patole, Tim Flohrer, Beatriz Jilete	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,	Muhammad Akbar Hussain, Muhammad Mehdi Hussain, Muhammad Waqar Haider, Muhammad Ayaz Hussain	Southern Cross Outback Observatories Project

* Zoom Presentation

		TRACK AND TACKLE SEQUENCE		
	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
	15:15 – 15:40	Post Capture Attitude Control for Unknown Debris	Nicolo Woodward, Riccardo Bevilacqua	ERAU
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(1), Hever Moncayo(2), Sebastian Leon(2)	ERAU
	17:15 – 17:40	GENERATIVE LEARNING MODEL TO SPACECRAFT ATTITUDE ESTIMATION IN PROXIMITY OPERATIONS	Gabriela Gavilanez and Hever Moncayo	ERAU
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	Geiger, Christopher; Geiger, Cwynn	Lockheed Martin
	11:20-11:45	JAPAN’S NATIONAL SECURITY STRATEGY AND THE EVOLUTION OF SSA/SDA CAPABILITIES	Kota Umeda, Kazuto Suzuki, Koichi Kikuchi, and Ikuko Kuriyama	Institute of Geoeconomics

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	11:45-12:10	A Treatment of the All-Clear Problem for Solar Energetic Particle Events and Subsequent Decision Making	Georgoulis, Manolis K.	JHU APL
	12:10-12:35	Conjunction Analysis using TLE Predictions Enhanced by ML Approach	Joseph N. Wilhelm and Hao Peng	ERAU
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 PhD, Michael Briggs PhD, Jan Distelbrink PhD, Jeff Ketel, Steve Ketel, Iulian C. Ruset PhD	LiDAR space.com
	14:25 – 14:50	ASTAREON: Capabilities and performances of MEDOC radar station for LEO survey, cataloguing and servicing	Florent MULLER, Jocelyn COUETDIC, Bruno DUGROSPREZ and Thomas ADVANI	ASTAREON
	14:50 – 15:15	Evaluating different sensor tasking strategies for object catalog build-up	Manuel Schubert, Christopher Kebschull, Johannes Gelhaus, and Simona Silvestri	TU Braunschweig
	15:15 – 15:40	SYNTHETIC COVARIANCE PRODUCTION USING A NEW DIGITAL APPROACH	Gist, R.G., Oltrogge, D.L., and Alfano, S.	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, and 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	Douglas J. Buettner, Richard E. Griffiths, Nick Snell, and John Stilley	University of Utah

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		UAP IN COMMERCIAL AVIATION		
	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	ERAU
	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	ERAU
	11:15 – 11:40	Lunar Particle Trajectory Estimation from Rocket Impingement	Nicola-Isabella Ruiz, Daniel Lopez, and Troy Henderson	ERAU
	11:40 – 12:05	Neural Network to Predict Hypervelocity Fragment Flyout from Satellite Explosion Breakup Events	Katharine E. Larsen, Tahsinul Haque Tasif, Riccardo Bevilacqua	ERAU
	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