



Digital Avionics Systems Conference

Orlando, Florida, USA - September 13-17, 2026

Digital Avionics Systems Conference CONFERENCE PROGRAM

SPONSORS AND ORGANIZERS



Co-Sponsor



Please visit our website for more information!
dasconline.org/2026

Table of Contents	2
Message from the Chairs	3
Message from the Technical Program Chairs	4
Venue Map	5
History of the DASC	6
Organizing Committee	7
Sponsors & Exhibitors	8
Program-at-a-Glance	10
Keynote Speakers	11
Social Events	12
Tutorial Schedule	13
Sunday Tutorial Speakers	14
Monday Tutorial Speakers	21
DASC Tracks	30
Technical Program: Tuesday, September 15, 10:30-12:00	31
Technical Program: Tuesday, September 15, 1:00-3:00	35
Technical Program: Tuesday, September 15, 3:30-5:30	39
Technical Program: Poster Session, Tuesday, September 15, 5:30-7:00	44
Technical Program: Wednesday, September 16, 10:30-12:00	45
Technical Program: Wednesday, September 16, 1:00-3:00	48
Technical Program: Wednesday, September 16, 3:30-5:30	53
Technical Program: Thursday, September 17, 10:30-12:00	57

Welcome to the 45th Digital Avionics Systems Conference (DASC)!

Since 1950, avionics has evolved from a supplementary feature into the essential technology that ensures functionality, safety, and comfort in aviation and space. What began as optional analog electronics has transformed into mandatory, complex, software-dominated systems. What comes next? Will AI replace traditional software? Find out for yourself.

Our DASC 2026 Technical Program Chairs, Mike Durling (GE Aviation) and Mark Gatti (Thales AVS France), have assembled a technical program centered on this year's theme: *Safe and Secure Digital Avionics in the Age of AI*. AI enables capabilities that can no longer be ignored—even in the safety-critical and certified domain of avionics. For the first time, DASC features two parallel tracks dedicated to AI, showcasing the latest industrial and scientific advances. Beyond AI, DASC 2026 continues its tradition as the premier venue for avionics innovation, with dedicated tracks on Integrated Modular Avionics, CNS, Systems, ATM, and UAVs.

While this stronger focus on AI has emerged naturally, we have also introduced several refinements to enhance your DASC experience. In the 2026 logo, you may notice a small fighter aircraft to welcome contributions from the defense domain, reflecting the longstanding exchange between civil and military avionics. Additionally, morning sessions begin 30 minutes later, keynotes are scheduled on all three conference days, a dedicated networking room is available, and sessions after lunch have been removed due to lower attendance in previous years.

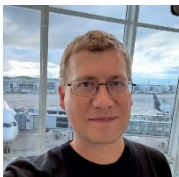
Your DASC experience extends beyond the technical sessions: we encourage you to take advantage of the tutorials to deepen your expertise, and to use breaks, lunches, receptions, and special events to build and strengthen your professional network and friendships within the avionics community. Enjoy the UAV high school and college competitions, support emerging talent in the student paper and poster competitions, and watch for award-winning contributions highlighted throughout the conference and celebrated at the awards luncheon.

With all this, we aim to deliver a truly premier international conference for avionics topics. However, it is not all work. Have you ever dined while a shark watches from behind, as a caricaturist captures the moment for posterity? If not, do not miss the special event at the Sharks Underwater Grill & Bar at SeaWorld Orlando.

DASC 2026 would not have been possible without the dedication of a strong and committed team. We would like to thank our chairs for the technical program (see above), tutorials (Krishna Sampigethaya), sponsors (Paul Kostek), students (Giancarmine Fasano), finances (Georg Andrew), publicity (Chris Watkins, Darbaz Darwesh, and Denis Loubach), awards (Leon Turner and Bastian Lüttig), UAV competition (Werner Osario and Chyna Lane), Women in Engineering (Sonali Das), and entertainment (Maarten Uijt de Haag), as well as the many volunteers who reviewed and evaluated papers and served as session and track chairs.

Please let us know how well we succeeded in delivering the DASC experience you expected, and how we can further improve our future conference or if you want to participate in the organization of the 46th DASC. Additionally, if you have time, Orlando – official Theme Park Capital of the World – offers plenty of opportunities for entertainment.

Enjoy DASC 2026!



Björn Annighofer
45th DASC General Chair
University of Stuttgart, Germany



Shana Fliginger
45th DASC Deputy General Chair
Gulfstream Aerospace Corporation

Message from the Technical Program Chairs

Welcome to Orlando for the 45th Digital Avionics Systems Conference!

It is our pleasure to welcome you to this year's conference and to a global community of researchers, students, educators, engineers, practitioners, regulators, and leaders advancing the future of avionics, aerospace systems, and digital aviation technologies. DASC remains a premier forum for the exchange of ideas, technical innovation, and practical insight across academia, industry, and government.

This year's conference theme, "Safe and Secure Avionics in the Age of AI," reflects one of the most important opportunities and responsibilities facing our community. As artificial intelligence becomes increasingly integrated into aerospace systems, the need to ensure safety, security, trust, certification readiness, and operational resilience has never been greater. The 2026 technical program is designed to explore these challenges in depth while highlighting the innovations that will help shape the future of aerospace.

This year, 312 abstracts were initially submitted, demonstrating the strong level of engagement and interest from the global DASC community. Of these, 149 abstracts were submitted by academic contributors, 62 by industry, and 15 by government agencies, with the remaining submissions coming from teams that included a combination of academic, industry, and agency contributors. The abstract pool also reflected DASC's international reach: 39% of abstracts had lead authors from North America, 34% from Europe, 12% from Asia, 7% from South America, and 8% from other regions. From these submissions, the conference program features 221 accepted papers, reflecting the quality and diversity of contributions across the field. Of these, 211 papers will be presented in technical sessions, and 10 papers will be presented in a dedicated poster session. Together, these presentations offer attendees a rich range of opportunities to engage with new research, emerging technologies, and practical solutions.

The conference is organized across 10 technical tracks: Avionics Platforms; Avionics Technologies; Cyber, Systems, and Software; Communications, Navigation and Surveillance and Information Networks; Air Traffic Management; Urban, Advanced Air Mobility & New Space; Unmanned Aircraft Systems & Spacecraft; Human Factors; AI Tools for Aerospace; and AI Applications for Aerospace. While AI-related content appears across all tracks, reflecting its growing relevance throughout the aerospace ecosystem, the dedicated AI Tools for Aerospace and AI Applications for Aerospace tracks were established in response to the especially strong number of submissions and high level of community interest in these topics.

We are deeply grateful to the diverse and global team of authors, reviewers, track & session organizers, and members of the Technical Program Committee whose dedication and expertise made this conference possible. Their efforts have helped create a rigorous, relevant, and engaging program for all attendees. Whether you are a long-time member of the DASC community or joining us for the first time, we hope you find this conference to be a valuable opportunity to learn, connect, and contribute to the conversations shaping the future of aerospace.

On behalf of the Technical Program Committee, thank you for being part of the 2026 DASC Conference. We are excited to welcome you and hope you enjoy a productive, collaborative, inspiring, and rewarding event. We trust that all attendees will come away from the event with new friendships, colleagues and ideas that will benefit both the individuals and our industry.



Michael Durling
45th DASC Technical Program Chair
GE Aerospace Research



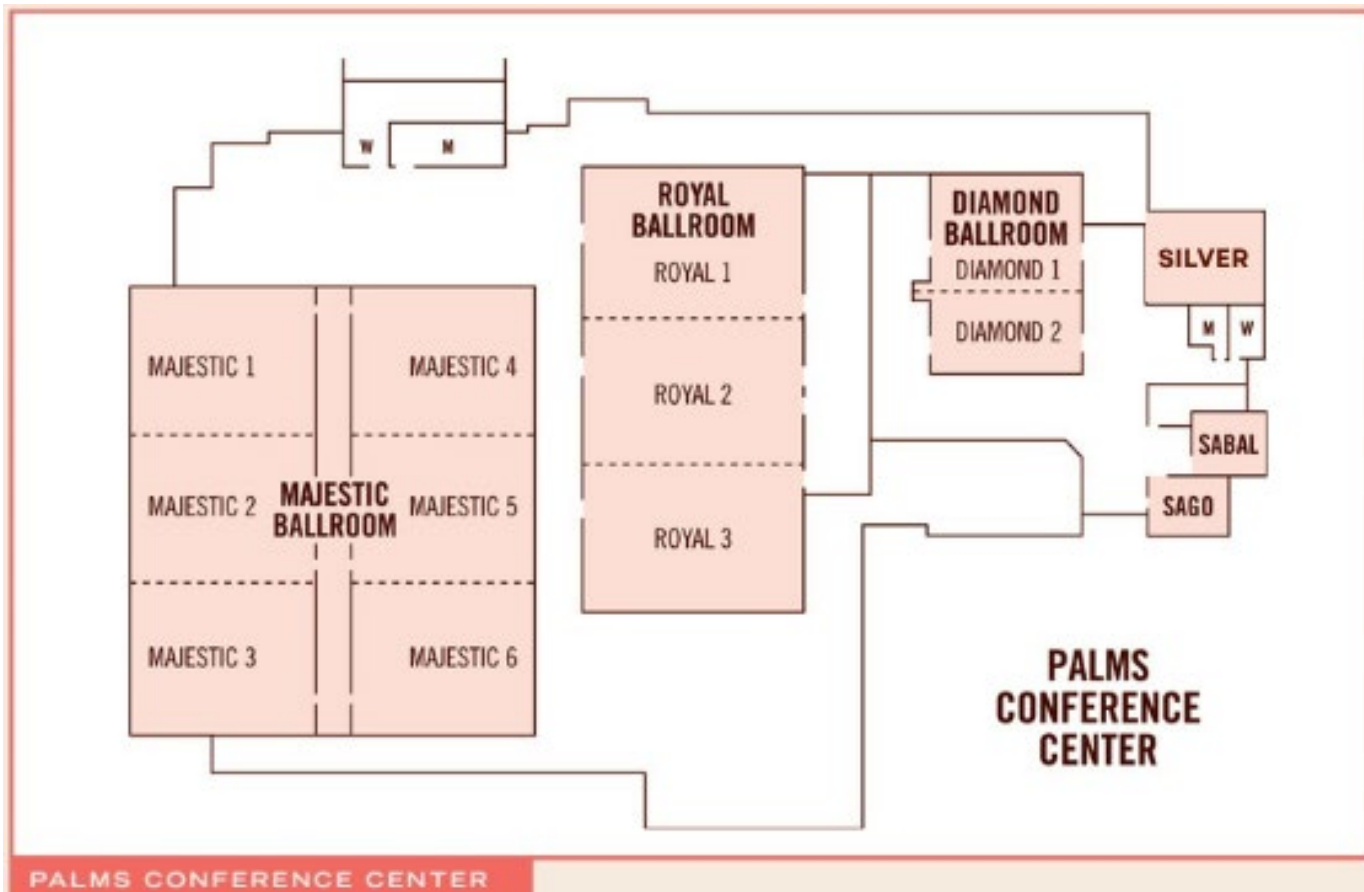
Marc Gatti
45th DASC Deputy Technical Program Chair
Thales AVS France SAS

Venue Map

DoubleTree by Hilton Orlando Theme Park Resort
10100 International Drive
Orlando, Florida 32821, USA

Wi-Fi Access

SSID/Network Name: DASC_2026
Password: meeting26



DASC General Chairs

The conference is organized by a steering committee, led by a general chair. The full list is provided below. It is worth noting that a few dedicated leaders served more than once: Jim Dieudonne (1995, 2001), Tom Redling (2009, 2010), Michael Dorneich (2021, 2024), Terry Morris (2022, 2024), and we are grateful that Denise Ponchak served three times (2009, 2015, 2018). Several early chairs were notable. Daniel Goldin later served as the NASA Administrator (1992 to 2001). John Ruth (Wright Patterson Air Force Base) was the inventor of the first avionics data bus. Cary Spitzer (NASA Langley) authored the classic *Digital Avionics Systems handbook*.

1975 C. Eric Ellingson	1997 Ed Trujillo	2013 Steve Young
1977 William M. Pulford	1998 Paul Gartz	2014 Benjamin Levy
1979 Daniel Goldin	1999 Glen Logan	2015 Denise Ponchak, Bernd Korn
1981 John Ruth	2000 Celesste Belcastro	2016 Erik Blasch, Kathleen Kramer
1983 Cary Spitzer	2001 Jim Dieudonne	2017 Douglas Abernathy
1985 Irving R. Reese	2002 Paul Geiser	2018 Denise Ponchak, Pavel Paces
1987 Randal Moore	2003 Jon Paris	2019 Alope Roy
1989 Ken Chow	2004 James Rankin	2020 Emmanuel Letsu-Dake, Michael Dorneich
1990 Jean Eason	2005 George Andrew	2022 Terry Morris
1991 Milt Holt	2006 Paul Kostek	2023 Chip Meserole
1992 Stewart Bailey	2007 John Gonda	2024 Michael Dorneich, Terry Morris
1993 Bill Larsen	2008 John R. Moore, Tom Redling	2025 Steven H. VanderLeest, Michael Durling
1994 Ken Leeper	2010 Tom Redling	2026 Björn Annighöfer, Shana Fliginger
1995 Jim Dieudonne	2011 Chris Watkins	
1996 Ellis Hitt	2012 Roger Oliva	

Best of Conference Winners

For several decades, the DASC has included awards for best papers of a session, best papers of a track, and the best paper of the overall conference. Here are the winners of the Best of Conference award (with apologies for a few dates that are missing).

- **1995** – G. Mark Brown, Douglas Bernard, Robert Rasmussen, *"Attitude and Articulation Control for the Cassini Spacecraft: A Fault Tolerant Overview"*
- **1996** – Anthony Warren, *"A Methodology and Initial Results Specifying Requirements for Free Flight Environment"*
- **2000** – Chuck LaBerge, *"System Design Considerations for the Use of Turbocodes in Aeronautical Satellite Communication"*
- **2002** – D. Rathbun, B. Capozzi, S. Kragelund, A. Pongpunwattana, *"An Evolution Based Path Planning Algorithm for Autonomous Motion of a UAV Through Uncertain Environments"*
- **2003** – Kohei Funabiki, Tomoko Iijima, Takuya Nojima, *"Evaluation of a Trajectory-Based Operations Concept for Small Aircraft: Airborne Aspect"*
- **2004** – M.S. Ali, R. Bhagavathula, R. Pendse, *"Airplane Data Networks and Security Issues"*
- **2005** – Andon Dimitrov Lazarov, Chavdar Nikolaev Minchev, *"ISAR Image Reconstruction Technique with Stepped Frequency Modulation and Multiple Receivers"*
- **2006** – Michiel de Vries, Joris Koeners, Fenne Roefs, Hilde van Ginkel, Erik Theunissen, *"Operator Support for Time-Critical Situations: Design and Evaluation"*
- **2007** – Jochum Tadema, Erik Theunissen, *"A Display Concept for UAV Autoland Monitoring: Rationale, Design and Evaluation"*
- **2008** – Carolyn Boettcher, Rance DeLong, John Rushby, Wilmar Sifre, *"The MILS Component Integration Approach to Secure Information Sharing"*
- **2009** – Abdullah Al-Nayem, Darren D. Cofer, Jose Meseguer, Steven P. Miller, Lui Sha, *"Implementing Logical Synchrony In Integrated Modular Avionics"*
- **2010** – Nico Franzen, Michael Schnell, Michael Walter, *"3D-New Concepts for a Decentralized, Self-Organizing Air-to-Air Radio Link"*
- **2011** – Thomas B. Billingsley, Mykel J. Kochenderfer, James P. Chryssanthacopoulos, *"Collision Avoidance for General Aviation"*
- **2012** – Hugh Blair-Smith, *"Data Convergence for Efficiency: A Holistic Rethink of the Passenger Experience"*
- **2013** – Suvo Ganguli, *"Airspeed Estimation Using Servo Current and Aircraft Model"*
- **2014** – Steven H. VanderLeest, *"Taming Interrupts: Deterministic Asynchronicity in an ARINC 653 Environment"*
- **2015** – Martin Strohmeier, Ivan Martinovic, Markus Fuchs, Matthias Schäfer, Vincent Lenders, *"OpenSky: A Swiss Army Knife for Air Traffic Security Research"*
- **2016** – Kyle D. Julian, Mykel J. Kochenderfer, Jessica Lopez, Jeffrey S. Brush, Michael P. Owen, *"Policy Compression for Aircraft Collision Avoidance Systems"*
- **2017** – Logan M. Branscum, Cody T. Nichols, *"Midair Collision Risk when Executing an Incorrect Approach during Established on Required Navigation Performance Operations"*
- **2018** – Kjell Kersandt, Guillem Muñoz-Ferran, Cristina Barrado, *"Self-training by Reinforcement Learning for Full-Autonomous Drones of the Future"*
- **2019** – Tuur Benoit, *"Sim: A Contract-Based Programming Language for Safety-Critical Systems"*
- **2020** – Cynthia Wolter, Lynne Martin, Kimberly Jobe, *"Human-System Interaction Issues and Proposed Solutions to Promote Successful Maturation of the UTM System"*
- **2021** – Steven H. VanderLeest, David Matthews, *"Incremental Assurance of Multicore Integrated Modular Avionics (IMA)"*
- **2022** – C. Watkins, J. Varghese, M. Knight, J. Ross, J. Kahn, B. Petteys, *"Data-Message Modeling for Multi-Lane Architectures on an IMA Platform Using the eSAM Method"*
- **2023** – Jean-Guillaume Durand, Arthur Dubois, Robert J. Moss, *"Formal and Practical Elements for the Certification of Machine Learning"*
- **2024** – Junsoo Kim, Gihun Nam, Dongchan Min, Jiyun Lee, Sam Pullen, *"Minimum Separation Boundary for UAM Tactical Deconfliction Based on Avoidance Risk Ratio Model"*
- **2025** – Andrew Oppelt, Wentao Zhang, Ikjun Jeon, Minji Park, Steven VanderLeest, Darko Marinov, *"An Open-Source DO-178C Structural Coverage Tool"*

DASC Titles

Over the previous 43 conferences, we have published thousands of papers. Looking across all the years, here are three interesting "record" holders. The shortest title of a paper appeared in 1992: "SAFEbus". The longest title was in 2017, "Hyper-spectral communications, networking & ATM as foundation for safe and efficient future flight: Transcending aviation operational limitations with diverse and secure multi-band, multi-mode, and mmWave wireless links: Project overview, aviation communications and new signaling". The most cited paper (with 172 citations to the paper so far) is the 2007 paper by Christopher B. Watkins and Randy Walter, "Transitioning from Federated Avionics Architectures to Integrated Modular Avionics".

General Co-Chair

Björn Annighöfer, *University of Stuttgart, Germany*

Deputy General Chair

Shana Fliginger, *Gulfstream Aerospace Corporation*

Technical Program Chair

Mike Durling, *GE Aerospace Research*

Deputy Technical Program Chair

Marc Gatti, *Thales AVS France SAS*

Finance Chair

George N. Andrew, *GNA Aerospace Consulting Group*

Professional Education/Tutorial Chair

Krishna Sampigethaya, *Embry-Riddle Aeronautical University-Prescott*

UAS Competition Chair

Werner Osorio, *Southwest Research Institute*

Student Research Competition Chair

Giancarmine Fasano, *University of Naples*

Awards Chair

Leon Turner, *Lockheed Martin*

Deputy Awards Chair

Bastian Lüttig, *German Aerospace Center (DLR)*

Awards Luncheon Chair

Maarten Uijt de Haag, *TU Berlin*

Publicity Chair

Chris Watkins, *Gulfstream Aerospace Corporation*

Deputy Publicity Chair Europe & Middle East

Darbaz Darwesh, *Aerogenium*

Deputy Publicity Chair South America

Denis Loubach, *Aeronautics Institute of Technology – ITA*

Sponsors & Exhibitors Chair

Paul Kostek, *IEEE AESS*

WIE Chair

Sonali Das, *University of Central Florida*

Conference Manager

Claire Folkerts, *Conference Catalysts, LLC*



Conference Sponsors



Co-Sponsor



Bronze Sponsors



Exhibitors



Tuesday Lunch Sponsor



Tuesday Morning Coffee Break Sponsor



EDT		Sunday 13 Sep 2026	Monday 14 Sep 2026	Tuesday 15 Sep 2026	Wednesday 16 Sep 2026	Thursday 17 Sep 2026
7:00 AM	sunrise			Speaker breakfast*	Speaker breakfast*	Speaker breakfast*
7:30 AM						
8:00 AM		Tutorials	Tutorial	Conference Opening & Keynote 1: JD McFarlan, Lockheed Martin	Daily announcements & Keynote 2: Kim Wasson, Joby	Daily announcements & Keynote 3: Craig Bloch Hansen, Civil Aviation Transport Canada
8:30 AM						
9:00 AM				Coffee Break	Coffee Break	Coffee Break
9:30 AM				Technical Sessions	Technical Sessions	Technical Sessions
10:00 AM		Coffee Break	Coffee Break	Lunch	Lunch	
10:30 AM						
11:00 AM				Technical Sessions	Technical Sessions	
11:30 AM		Tutorials	Tutorials			Awards Luncheon
12:00 PM						
12:30 PM						
1:00 PM		Coffee Break	Coffee Break	Coffee Break	Coffee Break	
1:30 PM				Technical Sessions	Technical Sessions	
2:00 PM						
2:30 PM						
3:00 PM		Tutorials	Tutorials	Technical Sessions	Technical Sessions	
3:30 PM						
4:00 PM						
4:30 PM						
5:00 PM						
5:30 PM						
6:00 PM			Ice Breaker Reception	Student & Poster Session		
6:30 PM						
7:00 PM	sunset					
7:30 PM				Women in Engineering	Exhibitor Reception	
8:00 PM						
8:30 PM						
9:00 PM						
9:30 PM						
10:00 PM						
10:30 PM						

Legend

Tutorial Social activity

Technical program Plenary

* only for speakers and chairs presenting that day

** start time is arrival time at Sharks Underwater Grill and Bar

This schedule is preliminary. The final program might undergo slight adjustments in future.



J.D. McFarlan

Lockheed Martin

Tuesday, September 15, 8:30 am | Royal 1-2

Artificial Intelligence and Digital Engineering in Development of Advanced Aircraft in Today's Complex Environment

With today's growing technical complexity in the field of Aerospace and Defense, the challenge is no longer generating information but rather understanding information. Discussion will center on how artificial intelligence is being applied in the design, development and support of today's aircraft. The utilization of digital engineering tools in the development life cycle will also be discussed and how these tools help accelerate the design cycle and manage complexity.

Biography

J.D. McFarlan III has 40 years' experience in the development of advanced aerospace defense products. He is currently serving as Lockheed Martin Aeronautics Vice President of Air Vehicle Engineering. This team provides engineering support for all programs at Lockheed Martin Aeronautics. He previously served as VP and Chief Engineer for Advanced Development Programs ISR/UAS, and Engineering & Technology Vice President for Functional Engineering. J.D. also served for 10 years as Vice President, F-35 Test & Verification. In this capacity he was responsible for managing the overall flight test program and the contract specification verification for the F-35 program. Mr. McFarlan graduated from Auburn University in 1984 with a Bachelor of Science degree in Mechanical Engineering. Also in 1984, Mr. McFarlan joined the Fort Worth Division of General Dynamics (which subsequently became part of Lockheed Martin in 1995) as a Propulsion Analysis engineer. J.D. received a Master of Science degree in Mechanical Engineering from the University of Texas at Arlington in 1991. J.D. has served in numerous positions of responsibility including F-35 Air Vehicle Development IPT lead; F-35 Air Vehicle Development IPT Deputy; Senior Manager F-35 Propulsion IPT; and Program Manager for the F-16 Diverterless Supersonic Inlet Flight Demonstration program. J.D. is an AIAA Fellow, serves on the Auburn Alumni Engineering Council, Aerospace Engineering Advisory Council for Auburn University and on the Board of Directors of Junior Achievement of the Chisholm Trail in Fort Worth. He is the executive sponsor for Lockheed Martin engagement with Auburn University and was named the 2021 Outstanding Mechanical Engineering alumnus at Auburn University. J.D. and his wife Tammy live in Fort Worth, TX and have two married daughters and three grandchildren.



Kim Wasson

Joby Aviation

Wednesday, September 16, 8:30 am | Royal 1-2

Around, Over, Under, Through: Adventures in Industrial Invention

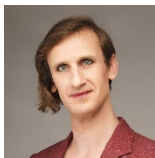
For a number of years, I've been privileged to have a part in developing a new kind of aircraft to provide a new kind of service.

As we've pursued this mission, we've encountered challenges and opportunities that we've met in creative and disciplined ways. Often this means detangling some complex problem or breaking down some impediment to reach a milestone or set a precedent.

My part of this undertaking focuses on building assurance and approval pathways for new safety-critical technologies. Sometimes, we encounter walls. In this talk, I'll share some experience in contending with walls of various flavors in the course of turning an idea into reality in the civil aviation safety context. We've made it around, over, under, or through a number of them, and I'll also share some things we've learned in the process.

Biography

Dr. Kim Wasson is a Staff Development Assurance Engineer and the Autonomy Certification Lead at Joby Aviation, where she is establishing assurance strategies and certification pathways for systems that integrate autonomous and other emerging capabilities. She has over 20 years of experience investigating, developing, and executing technical policy and practice for the safety assurance and certification of complex engineered systems. Dr. Wasson earned her PhD in Computer Science from the University of Virginia.



Craig Bloch-Hansen

Civil Aviation Transport Canada / Government of Canada

Thursday, September 17, 8:30 am | Royal 1-2

Accountability in Aviation Innovation

We can't do the same thing we've always done and expect better results. Innovation is the process of challenging our assumptions, methods, and deliverables in order to make meaningful change in the way capabilities are delivered. Innovation takes many forms across academic, industrial, and governmental aviation work, and has become a major force driving changes in aircraft function, airspace system capabilities, and operating procedures. While these efforts provide opportunities to rapidly and dramatically change aviation innovation must be accompanied by accountability for solutions, systems, and protection of the public interest. How can you be accountable for innovation in your organization?

Biography

Craig Bloch-Hansen is a Senior Engineer with Transport Canada Civil Aviation's (TCCA) Strategy and Emerging Technologies (SET) team. Prior to joining Transport Canada they worked in the defense and civil aerospace industry as a Systems Engineer focusing on system design and verification for multiple military and civilian certification projects. Craig supports the maintenance and oversight of the Canadian BVLOS drone regulations (CAR Part 9), leads engagements with Standards Development Organizations on emerging technology (including ASTM, ISO, SAE, RTCA, and IEEE), drafts safety assurance policies for drone products, and supports R&D efforts both domestically and internationally. Craig is also Canada's member to the ICAO RPAS panel, supports the ICAO AAM Study Group, and was previously JARUS Vice-Chair (Americas).

Special Event

Join us Wednesday, September 16, 2026 from 19:00-22:00 at SeaWorld Orlando's famous Shark Encounter & Sharks Underwater Grill!

Things to note:

- Address: 7007 SeaWorld Drive, Orlando, FL 32821
- Use the walkway to SeaWorld in the Southwest corner of the Doubletree Parking lot to walk over to SeaWorld in about 15 minutes!
- The special event is included with a full conference registration. Be sure to take your name badge with you to get into the event.



Ice Breaker Reception

Monday, September 14, 6:00 PM - 7:00 PM (EDT) | Outside Veranda

Use this time to grab a snack and a drink and get to know fellow DASC attendees.

Exhibitors' Reception

Tuesday, September 15, 7:00 PM - 9:00 PM (EDT) | Foyer

Grab a drink and a snack, and meet us in the Foyer to get to know our 2026 sponsors & exhibitors!

Women in Engineering Event

September 15, 7:30 PM - 9:00 PM (EDT) | Majestic 4

Fast Paced High Energy IEEE WiE Evening Hosted by IEEE Women in Engineering (WiE) Orlando Section

Connect, share, and unwind! This networking social is a fast paced, high-energy event packed with dynamic conversations, meaningful connections and interactive games, bringing together students, industry leaders, and academic professionals across our community. Connect Meet with peers, academic leaders, and industry veterans across all career stages through fun icebreakers in a relaxed, welcoming environment. Share Exchange dynamic ideas, emerging technical trends, and real-world career insight between students, researchers, and experienced professionals. Unwind Enjoy an informal social setting filled with games designed to build genuine community ties and lasting professional relationships.

Sunday, September 13

TIME	LABEL	PRESENTER	TUTORIAL TITLE	TRACK	ROOM
8-11am	SM1	Leonidas Kosmidis	Introduction to RTEMS: A Certified Multicore RTOS for Aerospace Systems	Space Systems	Majestic 3
11:30am-2:30pm	SL1	George Andrew	Spacecraft Avionics Systems Engineering Fundamentals - I	Space Systems	Majestic 3
3-6pm	SA1	George Andrew	Spacecraft Avionics Systems Engineering Fundamentals - II	Space Systems	Majestic 3
8-11am	SM2	Ozgur Ozdemir, Ismail Guvenc	Hands-on Tutorial for Programming the SDRs and UAVs at NSF AERPAW Platform	UAS	Majestic 2
11:30am-2:30pm	SL2	Maarten Uijt de Haag	Assured Navigation for Unmanned Aircraft Systems	UAS	Majestic 2
3-6pm	SA2	Giancarmine Fasano	Detect and Avoid for Unmanned Aircraft Systems	UAS	Majestic 2
8-11am	SM3	Krishna Sampigethaya	Introduction to Aviation Cybersecurity	Aerospace Cybersecurity	Majestic 1
11:30am-2:30pm	SL3	Krishna Sampigethaya	Introduction to Ethical Hacking and Penetration Testing	Aerospace Cybersecurity	Majestic 1
3-6pm	SA3	Andreas Zeitler	Security in Aerospace	Aerospace Cybersecurity	Majestic 1
11:30am-2:30pm	SL4	Samuel Siewert	Real-Time Machine Learning Deployment	Computing, RTOS, & High Performance Avionics	Diamond 1
3-6pm	SA4	Wanja Zaeske	Using NixOS for embedded Linux in avionics	Computing, RTOS & High-Performance Avionics	Diamond 1
8-11am	SM5	Kevin Driscoll	Murphy Was An Optimist - I	Safety and System Reliability	Diamond 2
11:30am-2:30pm	SL5	Kevin Driscoll	Murphy Was An Optimist - II	Safety and System Reliability	Diamond 2

Monday, September 14

TIME	LABEL	PRESENTER	TUTORIAL TITLE	TRACK	ROOM
8-11 am	MM1	Serge Chaumette	Swarming in the Era of Artificial Intelligence and Modern Warfare	Autonomy and ATM	Majestic 3
11:30am-2:30pm	ML1	Xavier Olive	Machine Learning Techniques for Aircraft Trajectory Analysis	Autonomy and ATM	Majestic 3
11:30am-2:30pm	ML2	Krishna M. Kalyanam, Stephen Clarke	Application of AI/ML tools for Air Traffic Management – a NASA perspective	AI/ML in Aviation	Majestic 2
3-6pm	MA2	Aharon David	ARP6983/ED-324: The Long and Winding Road Towards Certifying Airborne Artificial Intelligence [an AFuzion© tutorial]	AI/ML in Aviation	Majestic 2
8-11am	MM3	Leonidas Kosmidis	Introduction to CUDA Programming and GPU Hardware Architecture	High-Performance Avionics Computing I	Majestic 1
11:30am-2:30pm	ML3	Leonidas Kosmidis	Introduction to Certifiable General Purpose GPU Programming for Avionics Systems	High-Performance Avionics Computing I	Majestic 1
3-6pm	MA3	Wanja Zaeske	Microkit, the friendly abstraction layer making development on sel4 almost easy	Computing, RTOS & High-Performance Avionics	Diamond 1
8-11am	MM4	Samuel Siewert	Parallel + Quantum Programming for Aviation	High-Performance Avionics Computing II	Diamond 1
11:30am-2:30pm	ML4	Samuel Siewert	Real-Time Parallel Processing for Avionics	High-Performance Avionics Computing II	Diamond 1
8-11am	MM5	Ali Raz, Lance Sherry	Digital Transformation Foundations with Model-based System Engineering and Digital Engineering	Avionics Systems & Architecture	Diamond 2
11:30am-2:30pm	ML5	Martial Montrichard	Demystify Open Architecture and Integrated Modular Avionics (IMA)	Avionics Systems & Architecture	Diamond 2
3-6pm	MA5	Mustafa Dursun	Modular Open Systems Architectures in Multi-Sensor Data Fusion and Actuation Systems	Avionics Systems & Architecture	Diamond 2
3-6pm	MA6	Sabatini, Gardi, Blasch, Fasano, et. al.	AESS FREE Tutorial: Challenges and Advances in Digital Avionics for Aviation and Spaceflight Operations	FREE Tutorial	Majestic 3
3-6pm	MA7	John Ross	Multi-Core Processing Analysis and the Evolution Into Artificial Intelligence For Safety-Critical Systems	FREE Tutorial	Majestic 1

Sunday, September 13, 2026 | 8:00 AM – 11:00 AM

Hands-on Tutorial for Programming the SDRs and UAVs at NSF AERPAW Platform

Room: Majestic 2

Speaker: Ozgur Ozdemir, *NC State University*

Speaker: Ismail Guvenc, *North Carolina State University*

Aerial Experimentation and Research Platform for Advanced Wireless (AERPAW) is the first wireless communication research platform envisioned and built to allow studying the convergence of advanced wireless communication technologies (such as 5G) and autonomous drones. The platform became generally available to the public in November 2021. This tutorial introduces researchers to the AERPAW platform and its capabilities, enabling hands-on experimentation with wireless technologies and autonomous drones. Researchers who attend the tutorial will gain the skills to test their fundamental research ideas in a realistic outdoor wireless testbed.

Our tutorial is designed to be self-guided and self-paced. We have prepared a Self-paced Tutorial Environment (STE) to support participants, and it will continue to be available even after the event so that participants can access and learn anytime. STE is identical to the Production Environment (PE) but forms a separate, distinct substrate for practice. The tutorial's learning objectives are as follows:

- Familiarize researchers with the AERPAW platform: At the end of the tutorial, researchers will be able to use the AERPAW PE without needing much hand-holding. The tutorial will empower them to create their account, update their profiles, create projects and experiments, monitor their usage, and submit their experiment for the physical outdoor testbed run. The experiments done during the tutorial will not be sent to the physical testbed. However, participants will be shown how to submit their experiments and request a testbed run.
- Develop experiments: AERPAW is a batch-mode facility, which means experimenters develop experiments in a digital twin and submit experiments for execution on the physical testbed once development is complete. During the tutorial, participants will learn how to build their experiments in the digital twin.
- Write vehicle control applications: Participants will learn to write vehicle control applications that read and execute a mission from a plan file. They will also learn to create and edit mission plan files and troubleshoot failed flights. In AERPAW programmable vehicles (Unmanned Air Vehicles (UAVs) and Unmanned Ground Vehicles (UGVs)) are used to carry AERPAW portable nodes.
- Program software-defined radios: Participants will learn to program SDRs using GNURadio for channel sounding, enabling them to transmit, capture, and process wireless signals for experimental research. This experiment is between two AERPAW nodes, one acting as a transmitter and one as a receiver. Each of these nodes can be a fixed or a portable node. Both fixed nodes and portable nodes may contain programmable SDRs. Portable nodes can be carried by AERPAW vehicles.
- Collect and post-process the results: Participants will learn to collect results from their experiments and use software like MATLAB to post-process and derive meaningful information and plots from the gathered data.

Sunday, September 13, 2026 | 8:00 AM – 11:00 AM

Introduction to Aviation Cybersecurity

Room: Majestic 1

Speaker: Krishna Sampigethaya, *Embry-Riddle Aeronautical University-Prescott*

The cyber threat landscape of aviation is increasing. Threats bring new security risks that are specific to aviation and impact public safety and well-being. This tutorial will introduce you to aviation cyber security, focusing on the aircraft at the center of an increasingly complex and technology-driven aviation ecosystem.

Upon completion of this tutorial, you will be able to:

- comprehensively summarize and skillfully analyze today's aviation cyber threat and security landscape.
 - cybersecurity terms and concepts and their application to the aviation industry
- considerations in securing crewed aircraft, UAS aircraft, and their supporting systems.
- analyze case studies to evaluate threats from vulnerabilities as well as risks from threats to aviation systems.
- recognize, examine, and compare some of the recent advances in aviation cyber security, including those related to avionics, crew, and aircraft, air traffic control, UAS, and UTM systems.
 - Identify and discuss applicable legal and governmental policy frameworks and issues.

Sunday, September 13, 2026 | 8:00 AM – 11:00 AM

Introduction to RTEMS: A Certified Multicore RTOS for Aerospace Systems

Room: Majestic 3

Speaker: Leonidas Kosmidis, *Barcelona Supercomputing Center (BSC)&Universitat Politècnica de Catalunya (UPC)*

Avionics and Space systems require the use of a real-time operating system (RTOS) in order to meet their timing constraints. This tutorial focuses on the RTEMS RTOS, a widely used RTOS in commercial, certified systems. RTEMS is a POSIX-compliant RTOS, developed by OAR for the US DoD in the '80s, and it is open source with a permissive license. It has been under active and continuous development ever since and has a large open source community. In addition to its open source nature, thanks to an effort supported by the European Space Agency (ESA), a fully open source pre-qualification package for the GR740 and GR712 processors from FrontGrade Gaisler is provided. RTEMS is FACE and SOSA compliant and can be used either as is, or on top of ARINC-653 Operating Systems. With native support for multicore processors, both with sequential SMP tasks as well as with purely parallel OpenMP tasks, RTEMS is a key technology for the implementation of the homogeneous parallelism concept. This concept was introduced by our DASC 2023 publication and allows to meet the performance requirements of computationally intensive aerospace applications, while facilitating their certification according to AMC-20-193. In this tutorial, we will provide an introduction on the RTEMS operating system from both the user perspective as well as from the RTOS developer point of view. In particular, we will provide an overview of the RTOS capabilities and examples of successful use cases in existing space missions and avionics projects. We will examine the concept of homogeneous parallelism and how it can be applied using RTEMS. Finally, we will see how to port RTEMS to a new architecture.

Sunday, September 13, 2026 | 8:00 AM – 11:00 AM

Murphy Was An Optimist - I

Room: Diamond 2

Speaker: Kevin Driscoll, *Amentum*

There are avionics failures that most designers think can't happen, which actually can and do happen with probabilities far greater than requirements allow. This lack of understanding leads to designs with insufficient dependability, which then contributes to accidents and incidents. As one example, not understanding the Byzantine Generals Problem has led to \$1B+ (yes, that's B for billion) in accident losses, incidents requiring avionics retrofit fixes, and a space shuttle launch scrub. And yet, very few avionics designers understand the problem or how to create avionics designs that can tolerate it. This tutorial gives some reasons why designers fail to believe in these real failures and what can be done to overcome this unfortunate situation. Most of this tutorial will give examples of "incredible" failures that actually have happened. This includes examples of: Byzantine faults causing complete system failures, component transmogrifications, fault mode transformations (e.g. stuck-at faults that aren't so stuck), self-inflicted shrapnel, component creation via emergent properties, "evaporating" software, and exhaustively tested software that still failed. As appropriate, many of these examples are accompanied by observations of how to avoid or mitigate any future similar failure(s). The objective is for these to be "lessons learned and understood" rather than just "lessons observed".

This two-part tutorial is targeted to those who design, analyze, or write guidance / regulations / requirements / standards for safety- or security- critical avionics. Lack of the knowledge contained in this tutorial continues to contribute to significant accidents and incidents.

Sunday, September 13, 2026 | 11:30 AM – 2:30 PM

Assured Navigation for Unmanned Aircraft Systems

Room: Majestic 2

Speaker: Maarten Uijt de Haag, *Technische Universität Berlin*

This course provides a fundamental background in assured navigation for unmanned aircraft systems (UAS). It first introduces the various UAS/RPAS application domains and operational environments, UAS flight management and path planning, required performance parameters, and autonomy at the various levels of the Guidance, Navigation and Control function. Furthermore, it addresses the foundations of Global Navigation Satellite Systems (GNSS) and inertial navigation and discusses the challenges of operating in the various target environments with sole-means GNSS. Next, augmentation methods and alternative navigation methods will be discussed with a focus on guaranteeing required navigation performance in, especially, GNSS-challenged environments. Finally, the course will talk about the role of the navigation function in surveillance, geo-fencing and relative navigation in case of swarms of UAS.

Sunday, September 13, 2026 | 11:30 AM – 2:30 PM

Introduction to Ethical Hacking and Penetration Testing

Room: Majestic 1

Speaker: Krishna Sampigethaya, *Embry-Riddle Aeronautical University-Prescott*

To securely build and defend your systems against attacks, it is essential to adopt the mindset of an adversary. This tutorial will enable you to do so and provide you a foundational understanding of cybersecurity principles and practices in the context of aviation. You will learn about ethical hacking and penetration testing methodologies and explore how they are used to identify and exploit vulnerabilities in computer systems and networks. Essential topics such as information gathering and reconnaissance, network scanning and enumeration, and system exploitation, along with some demonstrations are provided. Standards, legal and ethical frameworks and guidelines are also covered.

Sunday, September 13, 2026 | 11:30 AM – 2:30 PM

Murphy Was An Optimist - II

Room: Diamond 2

Speaker: Kevin Driscoll, *Amentum*

There are avionics failures that most designers think can't happen, which actually can and do happen with probabilities far greater than requirements allow. This lack of understanding leads to designs with insufficient dependability, which then contributes to accidents and incidents. As one example, not understanding the Byzantine Generals Problem has led to \$1B+ (yes, that's B for billion) in accident losses, incidents requiring avionics retrofit fixes, and a space shuttle launch scrub. And yet, very few avionics designers understand the problem or how to create avionics designs that can tolerate it. This tutorial gives some reasons why designers fail to believe in these real failures and what can be done to overcome this unfortunate situation. Most of this tutorial will give examples of "incredible" failures that actually have happened. This includes examples of: Byzantine faults causing complete system failures, component transmogrifications, fault mode transformations (e.g. stuck-at faults that aren't so stuck), self-inflicted shrapnel, component creation via emergent properties, "evaporating" software, and exhaustively tested software that still failed. As appropriate, many of these examples are accompanied by observations of how to avoid or mitigate any future similar failure(s). The objective is for these to be "lessons learned and understood" rather than just "lessons observed".

This two-part tutorial is targeted to those who design, analyze, or write guidance / regulations / requirements / standards for safety- or security- critical avionics. Lack of the knowledge contained in this tutorial continues to contribute to significant accidents and incidents.

Sunday, September 13, 2026 | 11:30 AM – 2:30 PM

Real-Time Machine Learning Deployment

Room: Diamond 1

Speaker: Samuel Siewert, *California State University*

Artificial intelligence machine learning models used in aviation systems are growing with more use cases for edge and embedded use in real-time systems. Deployment for real-time systems edge use in aircraft and space systems requires rigorous performance and reliability testing of these models after initial architecture, training and validation is completed on scalable computing systems. Most often models must be quantized for embedded use, to reduce memory footprint and to reduce latency when used in avionics critical path solutions, and at the same time, the reliability of these models must be maintained. To meet new demands for deployment of AI machine learning models in digital avionics, it is important to consider standards for deployment such as ONNX, reliability and performance testing, comparison to full-scale models to prevent reliability regression using standard measures such as precision, recall, receiver operator characteristics, F1 PR geometric mean, and latency for deployed models when integrated with edge sensor systems pipelines. This tutorial will introduce you to the challenges, opportunities and the latest hardware and software tools and practices for machine learning model development with TensorFlow and PyTorch for convolutional neural networks and transformers and deployment of those models to embedded systems with acceleration by co-processing.

Sunday, September 13, 2026 | 11:30 AM – 2:30 PM

Spacecraft Avionics Systems Engineering Fundamentals - I

Room: Majestic 3

Speaker: George Andrew, *GNA Aerospace Consulting Group*

This course offers a detailed look at basic spacecraft avionics systems engineering and design processes and principals. All spacecraft avionics systems have similarities, but differ in many ways. This course addresses the up-front systems engineering process; requirement levels, trade studies, requirements allocation/linking requirements derivation, requirements verification, risk and risk assessment, safety, integration and test, costing, scheduling, and then applying all this to the avionics subsystem level design on a subsystem-by-subsystem basis. Attendees will be exposed to avionics subsystem designs that are typically used on satellite buses and will learn the terms, nomenclature and rules of thumb used in the development process. Each avionics subsystem is explained in detail to gain insight into manpower and cost requirements. In addition to spacecraft avionics equipment, the design, fabrication, and qualification of the electrical ground support equipment required for satellites are discussed in detail.

Who Should Attend:

Space, Spacecraft, and Launch Vehicle Systems Engineers, Avionics Subsystem Designers, Managers, Business Development personnel, System Safety Engineers, Risk Engineers and Managers, Electrical Ground Support Equipment Engineers, Integration and Test Engineers, and Environmental Test Engineers

What You Will Learn:

Applying the systems engineering process and principles to the system level design, developing the overall and subsystem architectures and then down into each of the Avionics Subsystems. How the systems engineering process is applied to evaluate and determine the risks, safety, and trade studies to the requirements derivation process, subsystem design, and then requirements verification.

Sunday, September 13, 2026 | 3:00 PM – 6:00 PM

Detect and Avoid for Unmanned Aircraft Systems

Room: Majestic 2

Speaker: Giancarmine Fasano, *Università degli Studi di Napoli Federico II*

In the latest years, sense and avoid (SAA), or detect and avoid (DAA), has represented one of the main roadblocks to the integration of unmanned aircraft systems (UAS) operations. This course outlines and reviews architectures, technologies, and algorithms for SAA. First, starting from a discussion about what constitutes a UAS and how it is different than manned aircraft, basic SAA definitions and taxonomies are discussed. Ground-based/airborne and cooperative/non-cooperative architectures are covered. The SAA process is dissected into its fundamental tasks, which are discussed in details. Different sensing algorithms and technologies are presented, including radar and optical systems. Potential and challenges of multi-sensor-based systems and data fusion are pointed out. Techniques for conflict detection, and approaches for remotely operated or autonomous avoidance are introduced. The tutorial ends with an overview of current perspectives and recent progress relevant to SAA for UAS integration in the Air Traffic Management (ATM) system and in the framework of UAS Traffic Management (UTM) / U-Space and Urban Air Mobility.

Sunday, September 13, 2026 | 3:00 PM – 6:00 PM

Security in Aerospace

Room: Majestic 1

Speaker: Andreas Zeitler, *Airbus Defence and Space Germany*

This tutorial aims to introduce participants to the critical aspect of product security in the aerospace environment. It will cover the motivation behind the need for product security, its definition, and the methods to address it within a company. Attendees will learn that the aspect of security nowadays does not only cover the protection of confidentiality, but expands in the aeronautical domain the additional upcoming challenge of airworthiness aspects as well as the assurance of the aircraft's mission capability under adverse cyber conditions. This tutorial will cover a comprehensive range of applicable standards, norms, and regulations in the international aerospace environment. It will address international standards such as ISO/IEC 27001 for information security management systems. Additionally, it will delve into aviation-specific standards, including the certification activities related to Part-IS as well as the related DO-326A and DO-356 for airworthiness security processes and methods, along with their European equivalents, ED-202A and ED-203. The tutorial will also explore regulatory frameworks from the FAA and EASA, as well as ICAO Annex 17 for aviation security standards and recommended practices. Furthermore, it will mention military standards such as MIL-STD-3022 for cybersecurity in military systems, NIST SP 800-53 for security and privacy controls, and the Common Criteria (ISO/IEC 15408) for evaluating the security properties of IT products. This broad coverage ensures that participants gain a thorough understanding of the regulatory landscape governing product security in both civil and military aerospace environments.

Sunday, September 13, 2026 | 3:00 PM – 6:00 PM

Spacecraft Avionics Systems Engineering Fundamentals - II

Room: Majestic 3

Speaker: George Andrew, *GNA Aerospace Consulting Group*

This course offers a detailed look at basic spacecraft avionics systems engineering and design processes and principals. All spacecraft avionics systems have similarities, but differ in many ways. This course addresses the up-front systems engineering process; requirement levels, trade studies, requirements allocation/linking requirements derivation, requirements verification, risk and risk assessment, safety, integration and test, costing, scheduling, and then applying all this to the avionics subsystem level design on a subsystem-by-subsystem basis. Attendees will be exposed to avionics subsystem designs that are typically used on satellite buses and will learn the terms, nomenclature and rules of thumb used in the development process. Each avionics subsystem is explained in detail to gain insight into manpower and cost requirements. In addition to spacecraft avionics equipment, the design, fabrication, and qualification of the electrical ground support equipment required for satellites are discussed in detail.

Who Should Attend & What you will Learn:

Space, Spacecraft, and Launch Vehicle Systems Engineers, Avionics Subsystem Designers, Managers, Business Development personnel, System Safety Engineers, Risk Engineers and Managers, Electrical Ground Support Equipment Engineers, Integration and Test Engineers, and Environmental Test Engineers

Applying the systems engineering process and principles to the system level design, developing the overall and subsystem architectures and then down into each of the Avionics Subsystems. How the systems engineering process is applied to evaluate and determine the risks, safety, and trade studies to the requirements derivation process, subsystem design, and then requirements verification.

Sunday, September 13, 2026 | 3:00 PM – 6:00 PM

Using NixOS for embedded Linux in avionics

Room: Diamond 1

Speaker: Wanja Zaeske, *German Aerospace Center DLR e.V.*

With the recent uptake of interest in using Linux for safety applications (for example ELISA), tooling and infrastructure become more and more relevant. This tutorial will provide a hands-on experience for embedded Linux using the Nix meta build system and the NixOS Linux distribution. The attendees will configure a small Linux Kernel configuration and a traditional systemd based user-space using the Nix DSL. A minimal demo application will be incorporated, and the resulting system will be booted and inspected using QEMU.

Monday, September 14, 2026 | 8:00 AM – 11:00 AM

Digital Transformation Foundations with Model-based System Engineering and Digital Engineering

Room: Diamond 2

Speaker: Ali K. Raz, *George Mason University*

Speaker: Lance Sherry, *George Mason University*

The landscape of complex system design and engineering stands at a paradigm shift on how future engineered systems will be acquired, designed, manufactured, and fielded. This paradigm shift, referred to as Digital Transformation of Enterprise, proposes digital engineering practice with integrated models across the system life cycle. Digital Engineering is a holistic approach to system design that replaces documents centric practices with digital models, artifacts, and data; beginning with highly abstract conceptual design models to high fidelity manufacturing, maintenance, and operational models. Advanced digital engineering capabilities now make it possible to perform a full spectrum system analysis with connected models throughout the system life cycle, such as analyzing the impact of requirements and conceptual design changes on the system manufacturing and sustainment. Model-Based Systems Engineering (MBSE) has become an essential enabler for Digital Transformation and Digital Engineering in the design and development of complex avionics systems, enabling improved traceability, verification, and system integration. This tutorial provides a comprehensive introduction to the Digital Transformation Initiative and the evolving Digital Engineering frameworks with a focuses on the role of MBSE via Systems Modeling Language (SysML) as a foundational tool for Digital Engineering in avionics systems. SysML offers a standardized, graphical notation for representing system architecture, behavior, and requirements, facilitating interdisciplinary collaboration and reducing design inconsistencies. Through a structured exploration of SysML diagrams—including requirement, structural, and behavioral views—this tutorial equips engineers with the fundamental knowledge required to implement Digital Engineering methodologies effectively in avionics development. Fundamental concepts of Digital Engineering that include creating digital twins, digital threads, physical twins and multi-fidelity model integration will be introduced. By leveraging Digital Engineering with MBSE, engineers can enhance design efficiency, mitigate integration risks, and improve compliance with industry standards such as ARP4754A. This primer on Digital Transformation serves as a steppingstone for avionics engineers and system architects seeking to adopt digital transformation, bridging the gap between traditional document-based approaches and a fully model-driven engineering paradigm.

Monday, September 14, 2026 | 8:00 AM – 11:00 AM

Introduction to CUDA Programming and GPU Hardware Architecture

Room: Majestic 1

Speaker: Leonidas Kosmidis, *Barcelona Supercomputing Center (BSC)&Universitat Politècnica de Catalunya (UPC)*

GPUs are currently considered from all safety critical industries, including avionics and aerospace to accelerate general purpose computations and meet performance requirements of new advanced functionalities, which are not possible with the legacy, single-core processors used in these domains, such as in the recent Airbus project Automatic Taxi, Take-off and Landing (ATTOL) project. This tutorial aims to provide a basic understanding of GPU programming and the GPU architecture. Both aspects are required for the acceleration of high performance algorithms for new generation avionics and aerospace systems, and more importantly for their certification. The tutorial will focus on GPU programming using the CUDA programming language and will explain the Hardware Architecture of both NVIDIA GPUs as well as AMD GPUs, which are currently used in avionics systems mainly for graphics, but also considered for general purpose computing in the near future.

This tutorial provides an introduction of all the basic concepts required of the attendees of the “Introduction to Certifiable General Purpose GPU Programming for Avionics Systems” Tutorial of the same instructors.

Objectives include: learn the basics of GPU programming using the CUDA programming language; understand the basics of the NVIDIA and AMD GPU hardware; learn how to compile, execute and profile a GPU program.

What is expected from the tutorial attendees:

Almost no prior knowledge is required from the tutorial attendees. They only need to be familiar with the C programming language. In order to participate in the hands on session, the tutorial attendees will need to bring their laptops, with WiFi connection and need to have installed an SSH client.

What resources are given to the attendees:

The attendees will be provided with the slides of the tutorial, as well as the descriptions of the exercises and their source code. The exercises will be self-paced and self-guided, so that the attendees will be able to complete them also on their own after the tutorial. Remote access to NVIDIA and AMD GPUs will be provided by presenters with all relevant software and development tools.

Monday, September 14, 2026 | 8:00 AM – 11:00 AM

Parallel + Quantum Programming for Aviation

Room: Diamond 1

Speaker: Samuel Siewert, *California State University*

Traditional digital avionics systems have included ground and flight segments where the most intensive processing is often done on the ground for applications like optimization compared to more immediate lower latency requirements for flight control and flight management. Combined ground and embedded avionics are however being asked to do more based on exciting new uses of airspace from UAS to space-based ventures as well as expanding commercial, military and general aviation. New features may range from interactive agent and assistant features that enhance flight optimization and planning to new cybersecurity features for the post-quantum world.

To meet new demands, much like other ground transportation with intelligent systems infrastructure, avionics will not only require more scale-up, but also scale out (networking) and co-processing in the cloud to remain secure and to integrate new AI and machine learning features. The drive to integrate AI and autonomous features is a combined opportunity and challenge that can be met using high-performance computing industry GP-GPUs (General Purpose Graphics Processing Units) and QPUs (Quantum Processing Units). This is similar in concept to GP-GPUs used today for online AI services such as LLMs (Large Language Models). Both GP-GPU and QPU can complement avionics software systems which can benefit from machine learning, optimization and post-quantum security, best provided by cloud co-processors. This exciting new architecture of QPU (Quantum Processing Units) and GP-GPU will be reviewed and examples demonstrated and explained.

This tutorial will introduce you to the challenges, opportunities and the latest hardware and software tools and practices for hybrid computing using parallel GP-GPU co-processors using CUDA as well as cloud-based QPUs using CUDA-Q. You will emerge with a fundamental understanding of concepts and theory, both proven, and more emergent to consider for future projects.

Monday, September 14, 2026 | 8:00 AM – 11:00 AM

Swarming in the Era of Artificial Intelligence and Modern Warfare

Room: Majestic 3

Speaker: Serge Chaumette, *University of Bordeaux, LaBRI Computer Science Research Labo...*

Drones, particularly small and medium-sized rotary-wing drones, have rapidly become essential tools for a wide range of industries, including agriculture, surveillance, emergency response, law enforcement, and the military. Additionally, swarms of heterogeneous drones—encompassing UAVs, UGVs, USVs, and UXVs—are increasingly valuable for navigating environments with diverse and complex constraints, such as air, ground, surface, and underwater. Modern warfare has undoubtedly driven advancements in swarms technology, while artificial intelligence has played a crucial role in enabling their capabilities and enhancing their effectiveness in various applications. The goal of this tutorial is to provide attendees with a comprehensive understanding of swarming with a focus on small/medium-sized rotary-wing aerial drones, covering both technical aspects and advanced considerations. By the end of the session, participants will have a solid grasp of swarming principles and be familiar with the specific challenges associated with these systems. The tutorial will also explore heterogeneous swarms, including UAVs, UGVs, USVs, and UXVs, equipping attendees with the knowledge of the unique issues and advantages that arise when integrating different types of systems. This knowledge is crucial in a world where this technology is poised to play a leading role in the near future and for many years to come.

Monday, September 14, 2026 | 11:30 AM – 2:30 PM

Application of AI/ML tools for Air Traffic Management – a NASA perspective

Room: Majestic 2

Speaker: Krishna Kalyanam, *NASA Ames Research Center*

Speaker: Stephen Clarke, *Flight Research Aerospace*

The tutorial introduces several Air Traffic Management (ATM) initiatives envisioned by the Federal Aviation Administration (FAA) for a bold future airspace that combines conventional traffic and new entrants (e.g., drones) without sacrificing safety. In this framework, we demonstrate the use of state-of-the-art AI/ML modeling and prediction tools that will enable efficient and safe traffic flow in the U.S. National Airspace System (NAS). In particular, Natural Language Processing (NLP) tools can help extract data (e.g., airspace constraints) that are currently contained in legacy text and audio format and convert them into digital information. The digitized information can be ingested by route planning, arrival scheduling and other decision support tools both on the ground and in the flight deck. We also show how historical data (track, weather & events) can be preprocessed, cleaned and utilized to create accurate models to predict flight trajectories and events of interest (e.g., Traffic Management Initiatives). We show several application areas within ATM that benefit from AI/ML including trajectory prediction, airport runway configuration management, automatic speech to text (of FAA command center webinars) and digitization of Letters of Agreement. The overarching goal of the work is to accelerate the integration of package delivery drones, air taxis and autonomous cargo aircraft into the NAS without impacting the safety and efficacy of current manned operations. With the correct application of modern AI/ML tools and availability of abundant data (both structured and unstructured), it is possible to build accurate models to do both prediction (e.g., estimated time of arrival) and provide recommendations (e.g., which runway configuration should be used). This tutorial is tailored to educate students, researchers and practitioners on what NASA is doing in this problem space and how AI/ML can help in solving some challenging problems in ATM. We will showcase several AI/ML methods used e.g., random forest, XGBoost, model free RL and NER by showing code snippets, input data samples and example output/results that validate our research.

Monday, September 14, 2026 | 11:30 AM – 2:30 PM

Demystify Open Architecture and Integrated Modular Avionics (IMA)

Room: Diamond 2

Speaker: Martial Montrichard, *Metavonics*

Modular Architecture technologies dates back to the 1990's. The first modular solution – The Common Integrated Processor – was introduced on the F-22. Civil applications started with the AIMS platform on the B777. Further came the notion of openness introducing interface standardization and a multi supplier approach. Benefits of a Modular Open Architecture in aviation is undisputable: from weight reductions (to the tune of 1000s of pounds), to spares pools optimization, all the way through to the ability to evolve functionality during the life of the aircraft. Two common perceptions: (i) this operational efficiency comes at a significant price and (ii) developing a system using an IMA architecture adds significant complexity (and cost) during the development and certification process. This tutorial intends to demystify the notions of Modular Open Architecture and Integrated Modular Avionics System. It will also highlight what are the key technical traps as well as the industrial challenges requiring careful consideration during a modular architecture development and certification.

Monday, September 14, 2026 | 11:30 AM – 2:30 PM

Introduction to Certifiable General Purpose GPU Programming for Avionics Systems

Room: Majestic 1

Speaker: Leonidas Kosmidis, *Barcelona Supercomputing Center (BSC)&Universitat Politècnica de Catalunya (UPC)*

GPUs are currently considered from all safety critical industries, including avionics and aerospace to accelerate general purpose computations and meet performance requirements of new advanced functionalities, which are not possible with the legacy, single-core processors used in these domains, such as in the recent Airbus project Automatic Taxi, Take-off and Landing (ATTOL) project. However, most of the R&D is currently focused on proof of concepts, which demonstrate the capabilities of employing GPUs in avionics, ignoring the certification challenges introduced by GPUs. This tutorial is the outcome of years of research at Barcelona Supercomputing Center (BSC) and technology transfer within safety critical industries, which culminated in the recent approval of these methods (July 2022) from the competent airworthiness authority in Spain and soon by EASA, for the first time in Europe. The attendees will learn how general purpose GPU code can be developed and certified according to safety critical standards used in these industries by using graphics-based technologies (OpenGL SC 1.0.1 and 2.0) which have already been used in certified safety critical products of the highest criticality (DAL-A avionics according to DO-178C and ASIL D according to ISO 26262). This will include the latest GPU programming API for safety critical systems ratified by Khronos, Vulkan SC, in March 2022, which one of the organisers (Dr. Leonidas Kosmidis) has been one of the earliest adopters and helped to be defined by participating in its Khronos Vulkan Safety Critical Advisory Panel. Special attention will be paid on Brook Auto/BRASIL, an open source technology developed at BSC (<https://github.com/lkosmid/brook>), which abstracts away the complexities of programming in these graphics based solutions in a CUDA like language, while retaining their certification benefits, and have been demonstrated with industrial use cases. Finally, the tutorial will include a hands-on session with exercises, during which the attendees will have the opportunity to experiment with the certifiable solution(s) of their interest. BSC will provide remote access to relevant GPUs with preinstalled certifiable GPU languages/APIs.

What is expected from the tutorial attendees:

The tutorial attendees must be familiar with general purpose GPU programming in one of the following GPU languages: CUDA, OpenCL, OpenGL (ES/SC), Vulkan, SYCL. Moreover, understanding of safety critical systems and familiarity with at least one safety standard (ISO 26262, DO-178C, ECSS) and safety critical code development guidelines (i.e. MISRA C/C++) is desirable but not required. An additional tutorial offering the necessary background will be offered by the tutorial instructors, to ensure that all attendees know the basics of CUDA programming. In order to participate in the hands-on session, the tutorial attendees will need to bring their laptops, with wifi connection and need to have installed an ssh client.

What resources are given to the attendees:

The attendees will be provided with the slides of the tutorial and instructions to setup Brook Auto in their laptops or target safety critical systems. Moreover, they will be provided with the descriptions of the exercises and their source code. Remote access to GPU systems with the safety critical programming languages/APIs preinstalled will be provided by presenters.

Monday, September 14, 2026 | 11:30 AM – 2:30 PM

Machine Learning Techniques for Aircraft Trajectory Analysis

Room: Majestic 3

Speaker: Xavier Olive, ONERA

This tutorial aims to provide participants with a comprehensive understanding of aircraft trajectory analysis using deterministic rule-based methods and machine learning techniques. Over the course of three hours, participants will learn how to access trajectory data, implement analysis techniques in Python, and design machine learning algorithms for more advanced studies. By the end of the tutorial, participants will acquire the necessary knowledge to analyse and interpret aircraft trajectories in diverse real-world scenarios.

Introduction. An overview of use cases for aircraft trajectory analysis, including commercial aviation, general aviation, and other low-altitude activities. The introduction will cover a wide array of possible applications, including situational awareness, airspace management, safety assessment, optimization, and collaborative decision-making.

Accessing trajectory data and meta-information. A practical guide on accessing open-access trajectory data. Participants will gain an understanding of various data formats and standards commonly used in the aviation industry, including ADS-B, Mode S, ADS-C for trajectories, and other open sources of data for complementing context information. We will demonstrate how to effectively access and parse trajectory data using Python.

Deterministic approaches to trajectory analysis. We will explain data cleaning, trajectory filtering and smoothing, essential steps for preparing trajectory data for analysis. Then, we will explore methods for integrating trajectory data with external sources such as weather data and flight plans, enhancing the contextual understanding of aircraft movements.

Machine Learning approaches. Unsupervised machine learning techniques for trajectory clustering, classification, and anomaly detection. We will learn how to uncover patterns and insights within trajectory data. Additionally, we will address the benefits of machine learning approaches over rule-based methods in different contexts. Graph Neural Networks and generative models will also be covered.

Designing a Toolchain for Trajectory Analysis. Best practices for conducting transparent and reproducible research, emphasizing the importance of open data, transparent methodologies, and reproducible analyses.

Conclusion. Suggestions for further exploration and research in aircraft trajectory analysis, emerging trends, potential areas for innovation, and future research.

Monday, September 14, 2026 | 11:30 AM – 2:30 PM

Real-Time Parallel Processing for Avionics

Room: Diamond 1

Speaker: Samuel Siewert, *California State University*

Digital aviation systems designers are being asked to provide more sophisticated autonomous and semi-autonomous features for aerospace systems including general aviation and UAS much like automotive AV/ADAS (Autonomous Vehicle/Advanced Driver-Assistance Systems) is challenging automotive embedded systems. Traditionally many of these systems have been modular AMP (Asymmetric Multi-Processing) systems that run simpler cyclic executives for hard real-time mission critical computation with clear separation via standardized interfaces from core flight control and management to less critical planning and convenience features. New features may range from soft real-time or interactive assistant features that enhance flight optimization and planning to the more traditional mission critical flight control systems. The drive to integrate assistant and autonomous features is a combined opportunity and challenge for embedded system hardware, firmware, and software systems engineering. This tutorial will introduce you to the challenges, opportunities and the latest hardware, firmware and software tools and practices. It includes emergent methods for parallel software development for real-time systems. You will emerge with a fundamental understanding of concepts and theory, both proven, and more emergent to consider for future projects. You will gain a clear review and understanding of traditional rate monotonic, provably safe, systems design as well as emerging methods to integrate new assistant, optimization, and autonomy features.

Monday, September 14, 2026 | 3:00 PM – 6:00 PM

AESS FREE Tutorial: Challenges and Advances in Digital Avionics for Aviation and Spaceflight Operations

Room: Majestic 3

Speaker: Giancarmine Fasano, *Università degli Studi di Napoli Federico II*

Speaker: Alessandro Gardi, *Khalifa University*

Speaker: Erik Blasch, *Air Force Research Laboratory*

Speaker: Roberto Sabatini, *Khalifa University*

In recent years, the market growth of the aviation sector has resumed its pre-pandemic trends, and a significant expansion of commercial space operations is being witnessed. The anticipated rise of commercial Unmanned Aircraft Systems (UAS) and Advanced Air Mobility (AAM) services at the lower end of the airspace, and of operations above Flight Level 600 and point-to-point high-speed transport at the other end are expected to compound these trends, challenging the viability of conventional Air Traffic Management (ATM) and airspace management paradigms. Concerning space operations, challenges linked to Space Domain Awareness (SDA) and space sustainability have also increased in the recent past, leading to the need of effective Space Traffic Management (STM) architectures supported by appropriate Communications Navigation and Surveillance technologies. Within this framework, this tutorial discusses the role of digital avionics for air and space vehicles in accommodating the growth of conventional and emerging forms of aerospace operations in a safe, efficient and sustainable manner. The emphasis is placed on existing challenges and on recent development trends. The context of a prospective Multi-Domain Traffic Management (MDTM) framework, which tackles the safety, efficiency and long-term sustainability of the atmospheric and near-Earth environments, will also be presented. The aim is to disseminate recent research outcomes and to identify existing gaps opportunities for industrial innovation in strategic areas, such as future systems for advanced CNS/ATM systems.

Monday, September 14, 2026 | 3:00 PM – 6:00 PM

ARP6983/ED-324: The Long and Winding Road Towards Certifying Airborne Artificial Intelligence [an AFuzion© tutorial]

Room: Majestic 2

Speaker: Aharon David, *AFuzion*

As airborne systems become more and more complex – partly in order to “off load” aircrews, the certification of such systems becomes even more challenging, as the emphasis shifts from the complexity of human behavior to the even greater complexities of systems and software. More complex and sophisticated techniques, such as Artificial-Intelligence (AI) / Machine-Learning (ML) are now making their first steps into aviation safety-critical systems, both airborne and on the ground, and this trend is matched by new certification requirements presented by worldwide regulators such as the FAA and EASA. In response to these emerging industry and regulatory needs, an entirely new certification eco-system is now emerging, starting with direct papers from EASA and the FAA, proceeding with the SAE G-34 & EUROCAE WG-114 committees, currently developing new “means of compliance” for aviation AI/ML applications. These committees have already produced a statement of concerns (AIR6988/ER-022) and a taxonomy document (AIR6987/ER-027), as a prelude to the means of compliance document currently being developed (ARP6983/ED-324), and additional supporting projects are developed in parallel.

Monday, September 14, 2026 | 3:00 PM – 6:00 PM

Microkit, the friendly abstraction layer making development on seL4 almost easy

Room: Diamond 1

Speaker: Wanja Zaeske, *German Aerospace Center DLR e.V.*

seL4, the fastest, most correct, (likely) most complicated kernel on earth provides unmatched performance and security/safety guarantees. Being policy free, it also presents developers with a plethora of complicated technical decisions. Microkit, a thin abstraction layer on top of seL4, provides for a radical simplification, massively reducing the complexity of development on top of seL4. This session provides a hands-on experience on developing for the Microkit, based upon the existing Wordle Tutorial offered earlier in this tutorial program.

Monday, September 14, 2026 | 3:00 PM – 6:00 PM

Modular Open Systems Architectures in Multi-Sensor Data Fusion and Actuation Systems

Room: Diamond 2

Speaker: Mustafa Dursun, *ASELSAN Inc.*

Modern avionics platforms increasingly rely on distributed multi-sensor data fusion and coordinated actuation to enable autonomy, survivability, and mission adaptability. However, legacy federated architectures limit scalability, vendor interoperability, lifecycle flexibility, and rapid technology insertion. This tutorial presents a structured approach to designing Modular Open Systems Architectures (MOSA) for integrated sensing, fusion, decision support, and actuation systems in aerospace platforms. It covers architectural principles, open interface standards, partitioning strategies, real-time constraints, safety considerations, and integration patterns across distributed avionics environments. The tutorial also addresses how AI-enabled fusion modules can be incorporated within MOSA frameworks while preserving determinism, traceability, and certification pathways. AI is treated as an architectural component—not as a replacement for structured system engineering. Participants will gain practical methods for building scalable, vendor-neutral, interoperable multi-sensor systems aligned with modern defense and aerospace acquisition policies emphasizing modularity and open standards.

Monday, September 14, 2026 | 3:00 PM – 6:00 PM

Multi-Core Processing Analysis And The Evolution Into Artificial Intelligence For Safety-Critical Systems

Room: Majestic 1

Speaker: John Ross, U.S. Army Combat Capabilities Development Command Aviation &...

This comprehensive tutorial explores the foundational principles of Multi-Core Processing (MCP) analysis and its critical evolution into Artificial Intelligence (AI)-enabled safety-critical avionics systems. This session delivers a structured, hands-on examination of interference channels, resource contention, and deterministic behavior in multi-core environments, which are key challenges for modern digital avionics. Show More Participants will gain insight into the U.S. Army's Multi-Core Processors Airworthiness Playbook (MAP) framework, including its roles-based lifecycle approach, Methods of Compliance (MoC), and alignment with industry standards such as DO-178C, DO-254, AC 20-193, and AMACC. Practical analysis techniques for interference mitigation, including cache coloring, shared memory partitioning, and formal scheduling methods, will be demonstrated through case studies. The tutorial then transitions into the frontier of AI integration, introducing Multi-Kernel Execution (MKE) as a proven methodology to extend traditional multi-core safety assurance principles to GPU-based AI hardware. Attendees will analyze real profiler data from the BOB AI Engine, a mission-critical inference system, demonstrating how MKE overlays map parallel kernel behavior onto conventional scheduling frameworks for airworthiness validation. The session concludes with an exploration of AI as an enabler and a tool: leveraging machine learning not only to power autonomous functions like sensor fusion and predictive maintenance, but also to assist in the certification process itself. Through demonstrations and structured material, this tutorial aims to equip engineers, architects, and safety practitioners with actionable methodologies for safely modernizing avionics platforms through MCP and AI, bridging legacy rigor with next-generation performance.



Modern avionics, driven by software-defined systems, connectivity, and growing certification demands requires innovative software technologies and engineering methods.

This one-day workshop brings together researchers and practitioners from academia and industry to discuss recent advances, emerging challenges, and future trends in avionics software and systems.



Stay informed:

<https://aviose-workshop.github.io/>



ARINC 818

What Does One Millisecond Mean to You?



Hypersonic missiles can fly at speeds in excess of 3km/s. When your system needs to detect, track, and defeat hypersonic threats, 3ms of latency can be the difference between life and death. *When milliseconds matter*, use the lowest-latency, most flexible video protocol on the globe: ARINC 818. If you need to wring out every ms, talk to Great River Technology, the ARINC 818 and Ethernet low-latency video experts.



**Great River
Technology**



Visit GRT at DASC 2026 to discuss your mission-critical, low-latency video application. ARINC 818 is the video standard for commercial and military high-performance aircraft.

Felipe Gohring de Magalhaes <i>Polytechnique Montréal</i>	Avionics Platforms	Leonidas Kosmidis <i>Universitat Politècnica de Catalunya</i>
Haifeng Zhu <i>BAE Systems</i>	Avionics Technologies	Antonini Puppini-Macedo <i>Boeing Commercial Airplanes</i>
Martin Halle <i>German Aerospace Center (DLR)</i>	Cyber, Systems and Software	Vanessa Tietz <i>Diehl Defence</i>
Vijay Venkataraman <i>Cirrus Aircraft</i>	Communications, Navigation and Surveillance and Information Networks	Giancarmine Fasano <i>University of Naples</i>
Bernd Korn <i>German Aerospace Center (DLR)</i>	Air Traffic Management	Xavier Olive <i>ONERA</i>
Billy Josefsson <i>Linköping University space2ground consulting</i>	Urban, Advanced Air Mobility & New Space	Catarina Lindholm <i>Saab</i>
Kim Wasson <i>Joby Aviation</i>	Unmanned Aircraft Systems & Uncrewed Spacecraft	Natasha Neogi <i>NASA</i>
Ferne Friedman-Berg <i>FAA</i>	Human Factors	Tor Finseth <i>Honeywell Aerospace</i>
Darren Cofer <i>Collins Aerospace</i>	AI Tools for Aerospace	Michael Holloway <i>NASA Langley Research Center</i>
Saswata Paul <i>GE Aerospace Research</i>	AI Applications for Aerospace	Liang Tang <i>GE Aerospace Research</i>

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: AAM Operations: Automation, Sensing & Simulation Tools

Session Chairs: Ali K. Raz (George Mason University), Giancarmine Fasano (Università degli Studi di Napoli Federico II)

10:30 AM - 11:00 AM

Redefining Flight Crew Communications Tasks: A New Approach to Automating Air Traffic Control Interaction

Room: Majestic 6 | Katarina Vuckovic (Collins Aerospace), Geoffrey Shapiro (Collins Aerospace), Timothy Wittkop (Collins Aerospace), David Gribble (Collins Aerospace)

11:00 AM - 11:30 AM

Requirements and vision-based processing for integrated incursion detection and precision navigation during UAM approach and landing

Best of Session

Room: Majestic 6 | Paolo Veneruso (Università degli Studi di Napoli Federico II), Enrico Miccio (Università degli Studi di Napoli Federico II), Roberto Opromolla (Università degli Studi di Napoli Federico II), Carlo Tiana (Collins Aerospace), Giacomo Gentile (Collins Aerospace), Giancarmine Fasano (Università degli Studi di Napoli Federico II)

11:30 AM - 12:00 PM

Generation of Synthetic Cities for AAM Research

Room: Majestic 6 | Saumya Gupta (University of Central Florida), Adan Vela (University of Central Florida), Abdullah Althuwaini (University of Central Florida)

Track: AVIONICS TECHNOLOGIES

Session: AI and Adaptive Technologies for Avionics

Session Chair: Anudeep Karnam (Eindhoven University of Avionics)

10:30 AM - 11:00 AM

Predicting CNN Inference Latency under System Load on a UAV Onboard Device

Room: Majestic 5 | Changhui Bae (Gyeongsang National University), Jinet Onyango (Gyeongsang National University), Euteum Choi (Gyeongsang National University), Seongjin Lee (Gyeongsang National University),

11:00 AM - 11:30 AM

Enhancing Runway Detection Models with Synthetic-to-Real Style Transfer

Best of Session

Best of Track

Room: Majestic 5 | Estelle Chigot (Fédération ENAC ISAE-SUPAERO ONERA, Université de Toulouse), Solène Barrat (Airbus), Manon Huguenin (Airbus), Dennis Wilson (Fédération ENAC ISAE-SUPAERO ONERA, Université de Toulouse), Thomas Oberlin (Fédération ENAC ISAE-SUPAERO ONERA, Université de Toulouse)

11:30 AM - 12:00 PM

ATC ASR for Voice-Assisted Avionics: Stratified and Time-Shift Augmented Finetuning and Segment-Level Evaluation

Room: Majestic 5 | Jianhua Liu (Embry-Riddle Aeronautical University), Shital Pandey (Embry-Riddle Aeronautical University)

Track: AI APPLICATIONS FOR AEROSPACE

Session: AI for Next-Generation CNS and Space-Based Infrastructure

Session Chairs: Chester Dolph (NASA Langley Research Center), Sarat Chandra Varansi (GE Aerospace)

10:30 AM - 11:00 AM

A Synthetic Data Generation Framework for Model-Based Deep Learning in LDACS-Based Passive Radar

Room: Majestic 1 | Boromir Videv (German Aerospace Center (DLR)), Alberto Arana Ragel (German Aerospace Center), Dmitriy Shutin (German Aerospace Center), Alexandra Filip-Dhaubhadel (German Aerospace Center)

11:00 AM - 11:30 AM

Certifiable AI-Assisted GNSS Spoofing Detection for Aviation-Grade CNS and Resilient PNT Systems

Room: Majestic 1 | Ali Pirsivash (Laboratory of Space Technologies, Embedded Systems, Navigation and Avionics (LASSENA), Department of Electrical Engineering, École de technologie supérieure (ÉTS)), Stanislas Mabin (École de technologie supérieure (ÉTS)), Antoine Parisé (Laboratory of Space Technologies, Embedded Systems, Navigation and Avionics (LASSENA), Department of Electrical Engineering, École de technologie supérieure (ÉTS)), Rene Jr. Landry (École de Technologie Supérieure)

11:30 AM - 12:00 PM

Reinforcement Learning-Based Arrival Merging and Spacing Control for Maximizing Airport Landing Capacity in BlueSky Simulation

Best of Session

Best of Track

Room: Majestic 1 | Shaorui Ren (Korea Aerospace University), Hojong Baik (Korea Aerospace University)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: Autonomous Mission Intelligence and Delivery Safety

Session Chairs: Billy Josefsson (Linköping University LiU), Michael Dorneich (Iowa State University)

10:30 AM - 11:00 AM

See&Say: Vision Language Guided Safe Zone Detection for Autonomous Package Delivery Drones

Best of Session

Room: Silver | Mahyar Ghazanfari (The George Washington University), Peng Wei (George Washington University)

11:00 AM - 11:30 AM

AWARE: Autonomy for Awareness & Response in Open-World UAV Missions

Room: Silver | Srushti Desai (GE Aerospace), Matthew Murakami (GE Aerospace Research), Eric Roberts (GE Aerospace Research), Arjuna Flenner (GE Aerospace), Brian Prudlow (GE Aerospace)

11:30 AM - 12:00 PM

Dynamic Obstacle Collision Avoidance in Urban Manned-Unmanned Teaming: A Velocity Obstacle and Control Barrier Function Approach

Room: Silver | Tjdwls9267, Ulcheon Lee (Department of AI Convergence Engineering, Gyeongsang National University), Seonah Lee (Department of AI Convergence Engineering, Gyeongsang Nationa...)

Track: HUMAN FACTORS

Session: AI in ATM and Airspace Operations

Session Chair: Uwe Klingauf (Technische Universität Darmstadt)

10:30 AM - 11:00 AM

Preliminary Validation of a Terminal Airspace Digital Assistant through Low-Fidelity Simulation

Best of Session

Room: Diamond 1 | Jason Gauci (University of Malta), Brian Zammit (University of Malta), Samuel Baldacchino (University of Malta), Timothy Kayode Samson (University of Malta), Maximilian Bezzina (Ingenav), Nicolas Borovich (Ingenav), Mikko Jurvansuu (Ingenav), David Woolford (Ingenav), Francesco Nacchia (ENAV), Luna Babusci (ENAV), Patrizia Criscuolo (ENAV), Ana Ferreira (DeepBlue), Ginevra Fedrizzi (DeepBlue), Ingrid Burke (Frequentis Orthogon GmbH), Thomas Guenther (Frequentis Orthogon GmbH), Tomi Aijo (MONAD), Aleks Viiljanen (MONAD), Antti Puhakka (MONAD), Jonas Nikula (MONAD), Eero Hakanen (MONAD), Risto Viitanen (MONAD), Mirja Hopiavuori (MONAD), Jaakko Kemppainen (MONAD)

11:00 AM - 11:30 AM

Reliability-Aware Communication-Based Decision Support for Reduced-Crew Aviation Operations

Room: Diamond 1 | Ramon Viana (Aeronautics Institute of Technology), Vinicius Abrão S. Marques (Federal University of Triângulo Mineiro), Carlos Henrique Q. Forster (Aeronautics Institute of Technology)

11:30 AM - 12:00 PM

AI Agents in Aviation Security: A Comparative Analysis of Capabilities, Risks, and Human-AI Hybrid Approaches

Room: Diamond 1 | Sneha Sudhakaran (Florida Institute of Technology), Laxima Niure Kandel (Embry-Riddle Aeronautical University, Daytona Beach)

Track: AI TOOLS FOR AEROSPACE

Session: AI Tools and LLM

Session Chairs: C Michael Holloway (NASA Langley Research Center), Darren Cofer (Collins Aerospace)

10:30 AM - 11:00 AM

LLM-Assisted Test Case Synthesis from Avionics Requirements with Hallucination Mitigation

Best of Session

Room: Majestic 2 | Saswata Paul (GE Aerospace), Sarat Chandra Varanasi (GE Aerospace), Khoi Nguyen (GE Aerospace Research Center), Baoluo Meng (GE Aerospace), Sharad Dixit (GE Aerospace Research), Kareem Aggour (GE Aerospace Research Center)

11:00 AM - 11:30 AM

Auditable Imputation of Aviation Sensor Data via Multi-Stage Language-Model Reasoning

Room: Majestic 2 | Sandeep Kalari (Old Dominion University), Andy Ramlatchan (Old Dominion University), MADHU LOKESH (Old Dominion University), Ravi Mukkamala (Old Dominion University)

11:30 AM - 12:00 PM

Traceable LLM-Generated Hazard Scenarios for Operational Safety Analysis of Aviation Systems Using ASRS Reports

Room: Majestic 2 | Cristian Mascia (University of Naples Federico II), Roberto Pietrantuono (University of Naples Federico II), Daniel Rodriguez (University of Alcalá), Stefano Russo (University of Naples Federico II)

Track: AIR TRAFFIC MANAGEMENT (ATM)

Session: Flight Track Technology and Weather Avoidance

Session Chairs: Alexander Kuenz (German Aerospace Center DLR e.V.), Rainer Koelle (EUROCONTROL)

10:30 AM - 11:00 AM

Avoidance of Adverse Weather Areas in Amsterdam Airport Schiphol Operations using Advanced Controller Support Tools

Room: Majestic 3 | Juergen Teutsch (Netherlands Aerospace Centre - NLR), Vladimíra Čanádiová (Deep Blue srl), Ole de Koning (Netherlands Aerospace Centre - NLR), Alfonso Levantesi (Deep Blue S.r.l.)

11:00 AM - 11:30 AM

Insights Into Airspace Flight Track Latent Proximity Risk - A Case Study of Chicago TRACON and Adjacent Airspace

Best of Session

Room: Majestic 3 | Fahimeh Ghorbani (George Mason University Volgenau School of Information Technology and Engineering), Lance Sherry (George Mason University), John Shortle (George Mason University)

11:30 AM - 12:00 PM

DESIGN OF A SYNTHETIC FLIGHT TRACK GENERATION (SFTG) TOOL

Room: Majestic 3 | Shahab Aref (George Mason University), Fahimeh Ghorbani (George Mason University Volgenau School of Information Technology and Engineering), John Shortle (George Mason University), Lance Sherry (George Mason University)

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: GNC

Session Chairs: Wes Ryan (Northrop Grumman), Andrew Videmsek (Reliable Robotics)

10:30 AM - 11:00 AM

Finite-Width Circulation Fields for Gradient Vector Field Guidance

Room: Diamond 2 | Travis Moleski (Ohio University), Michael Variny (Ohio University), Jay Wilhelm (Ohio University)

11:00 AM - 11:30 AM

Diffusion-Based Synthesis of sUAS Crosstrack Deviation Trajectories for Simulation

Room: Diamond 2 | Saumya Gupta (University of Central Florida), Adan Vela (University of Central Florida)

11:30 AM - 12:00 PM

Analytical Estimation of Off-Nominal Volumes under UA Intent Uncertainty in UTM BVLOS Operations

Best of Session

Room: Diamond 2 | Vincent Kuo (Metis Technology Solutions), José Ignacio de Alvear Cárdenas (San Jose State University), Priyank Pradeep (Analytical Mechanics Associates), Seungman Lee (NASA Ames Research Center)

Track: AVIONICS PLATFORMS

Session: Multicore IMA, Timing, and Interference Management

Session Chair: Martial Montrichard (Metavonics)

10:30 AM - 11:00 AM

Non-intrusive performance benchmark for partitioned systems

Best of Session

Room: Majestic 4 | Felipe Gohring de Magalhaes (Polytechnique Montreal), Jean-Baptiste Lefoul (Polytechnique Montreal), Gabriela Nicolescu (Ecole polytechnique montreal)

11:00 AM - 11:30 AM

Learning from Multi-Core Adoption in Automotive and Avionics: Architectural Trade-offs and Contention Management

Room: Majestic 4 | Jay Thomas (LDRA Technology, Inc.), Alex Lim (LDRA Technology, Inc.), Stephen Di Camillo (LDRA Technology, Inc.)

11:30 AM - 12:00 PM

Interference Contracts: a Novel Approach to Multicore IMA

Room: Majestic 4 | Samuel Thompson (Rapita Systems), Christos Evripidou (Rapita Systems, Ltd)

Track: CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)

Session: Testing and Certification

Session Chairs: Bjorn Andersson (Carnegie Mellon Software Engineering Institute), Samuel Thompson (Rapita Systems)

10:30 AM - 11:00 AM

Enhancing DO-178C Compliance for Safety-Critical Requirements: A Controlled Natural Language and Rule-Based Verification Approach

Room: Royal 3 | Rim Zrelli (Polytechnique Montréal), Henrique Amaral Misson (Polytechnique Montréal), Maroua Ben Attia (HumalTas Solutions), Abdo Shabah (HumalTas Solutions), Felipe Gohring de Magalhaes (Polytechnique Montreal), Gabriela Nicolescu (Ecole polytechnique montreal)

11:00 AM - 11:30 AM

An Assessment Basis for Aeronautical System Assurance Cases

Best of Session

Room: Royal 3 | Ewen Denney (KBR / NASA Ames Research Center), Ganesh Pai (KBR / NASA Ames Research Center)

11:30 AM - 12:00 PM

Exploring The Multi-Core Airworthiness Playbook as a Procedure for Multi-Core Safety Critical Airworthiness Certifiability Using Case Study Analysis.

Room: Royal 3 | John Ross (U.S. Army Combat Capabilities Development Command Aviation &...), Aaron Musser (Collins Aerospace), Roshini Ashok (US Army DEVCOM AvMC), Dave Radack (Collins Aerospace), Jamie Zaehring (Collins Aerospace), William Vance (TriVector Services, Inc.), Chase Blakey (Intuitive Research and Technology Corporation), Hugh Turner (Brockwell Technologies, Inc)

Track: AIR TRAFFIC MANAGEMENT (ATM)

Session: Airport and Terminal Operations Analytics

Session Chair: Juergen Teutsch

1:00 PM - 1:30 PM

Supervised Machine Learning Models for Landing Runway Prediction

Room: Majestic 3 | Timothy Kayode Samson (University of Malta), Jose Pacheco De Almeida Prado (Institute of Aerospace Technologies, University of Malta), Brian Zammit (University of Malta), Alan Muscat (QuAero Limited), Jason Gauci (University of Malta)

1:30 PM - 2:00 PM

Assessment Technique of Continuous Descent Operations using Real Life Data

Room: Majestic 3 | Alexander Kuenz (German Aerospace Center DLR e.V.), Annette Temme (DLR), Hanna Frolova (Eurocontrol MUAC), Renaud De San (Eurocontrol MUAC), Joachim Scheiderer (Lufthansa), Andreas Roedig (Lufthansa)

2:00 PM - 2:30 PM

Airport Terminal Passenger Queue Forecasting for Departure Gates and Security Checkpoints

Best of Session

Room: Majestic 3 | Juhwan Lee (Korea Aerospace University), Seokbin Yoon (Korea Aerospace University), Keumjin Lee (Korea Aerospace University), Hojong Baik (Korea Aerospace University), Seyeon Jung (Incheon International Airport Corporation)

Track: HUMAN FACTORS

Session: Advanced Interfaces for Pilot Decision Support

Session Chair: Robert Rorie (NASA Ames Research Center)

1:00 PM - 1:30 PM

Real-Time Flight Test Maneuver Selection with Monte Carlo Tree Search

Room: Diamond 1 | Helen Pruitt-Kennett (Stanford University), Nicholas Bostock (Stanford University), Marc Schlichting (Stanford University), Mykel Kochenderfer (Stanford University)

1:30 PM - 2:00 PM

A Human Factors Evaluation of 3D Weather Visualization for General Aviation Pre-Flight Decision Making

Room: Diamond 1 | Ahmad Waseem Ghauri (Ohio University), Gary Pokodner (Federal Aviation Administration), Ian Johnson (Federal Aviation Administration), Ethan Krimins (FlightProfiler), Chad Mourning (Ohio University)

2:00 PM - 2:30 PM

Eye-Tracking-Driven Adaptive Map Filtering for Reducing Cognitive Load in Digital Avionics Interfaces

Room: Diamond 1 | Dimosthenis Minas (University of Patras), Aggelos Fotopoulos (University of Patras), Michalis Xenos (University of Patras)

2:30 PM - 3:00 PM

Human Performance Assessment for Sustainable Flights Through Enhanced Avionics

Best of Session

Best of Track

Room: Diamond 1 | Marie Goetz (German Aerospace Center (DLR)), Fethi Abdelmoula (German Aerospace Center (DLR)), Leo Julius Materne (German Aerospace Center (DLR)), Martin Gerber (Swiss Skylab Foundation (SkyLab)), Andreas Winhard (Swiss Skylab Foundation (SkyLab))

Track: AI APPLICATIONS FOR AEROSPACE

Session: AI for Safety, Anomaly Detection, and Health Management

Session Chairs: Travis Moleski (Ohio University), Sarat Chandra Varanasi (GE Aerospace)

1:00 PM - 1:30 PM

Data Analytics Service for Vulnerability Discovery Monitoring

Room: Majestic 1 | Daniel Weckler (KBR), Bryan Matthews (NASA)

1:30 PM - 2:00 PM

Every Flight, Analyzed: Scaling Hybrid AI with Anomaly Detection, Explainability, and Language Model Causal Reasoning for the Exabyte Era of Aviation

Best of Session

Room: Majestic 1 | John Sipple (Vyzerion AI), Quang Ngoc Huong Nguyen (Vyzerion AI), Abdou Youssef (The George Washington University)

2:00 PM - 2:30 PM

Privacy Preserving Cross-Operator Learning for Aircraft Engine Degradation and RUL Estimation

Room: Majestic 1 | Kanchon Gharami (Embry-Riddle Aeronautical University), Shafika Showkat Moni (Embry Riddle Aeronautical University)

2:30 PM - 3:00 PM

Machine Learning Approach to Anomaly Detection for Life Support Systems

Room: Majestic 1 | Frederik Junker (University of Stuttgart), Paul Stelter (University of Stuttgart), Oliver Stötter (University of Stuttgart), Yassine Akhiat (University of Stuttgart, Institute of Aircraft Systems), Christian Mayer (University of Stuttgart, Institute of Space Systems), Zamira Daw (Universität Stuttgart), Claas Olthoff (University of Stuttgart, Institute of Space Systems)

Track: AI TOOLS FOR AEROSPACE

Session: AI Tools and DO-178C

Session Chairs: Evan Dill (NASA Langley Research Center), Kimberly Wasson (Joby Aviation)

1:00 PM - 1:30 PM

Reverse Engineering Provisional DO-178C Certification Artifacts with Large Language Models

Room: Majestic 2 | Jayaprakash Kambhampaty (Georgia Institute of Technology), Elise Theriot (Georgia Institute of Technology), Michael Davis (Georgia Institute of Technology), Nathan Wong (Georgia Institute of Technology), Olivia Fischer (Georgia Institute of Technology), Dimitri Mavris (Georgia Institute of Technology), Myriam Souaya (The Boeing Company)

1:30 PM - 2:00 PM

KISS my ML Assurance

Best of Session

Room: Majestic 2 | Darren Cofer (Collins Aerospace), Kyle Ford (Collins Aerospace), Scott Nagel (Collins Aerospace), Dmitrii Kirov (Collins Aerospace), Arthur Clavière (Collins Aerospace), Cong Liu (Collins Aerospace), Heber Herencia-Zapana (Collins Aerospace)

2:00 PM - 2:30 PM

A Safety-Oriented Architecture for Integrating AI-Based Functions into DO-178C Compliant Avionics Systems

Room: Majestic 2 | Ercan Ürek (TR Airworthiness Services Inc.)

2:30 PM - 3:00 PM

AI Assurance integrating classical DO-178 principles for certification of Space applications

Room: Majestic 2 | Jesus Gonzalez-Llorente (ETS), Saavan Ravindranath (ETS), Carlos Alejandro Salazar Sanchez (ETS)

Track: AVIONICS PLATFORMS

Session: Self-Adaptive Platforms, Plug & Fly, and Model-Based Interfaces

Session Chair: Wanja Zaeske

1:00 PM - 1:30 PM

eSAM: Dynamic Generation of Interface Control Documents in a MBSE Model

Room: Majestic 4 | Chris Watkins (Gulfstream Aerospace Corporation), F. Scott Cowan (Gulfstream Aerospace Corporation)

1:30 PM - 2:00 PM

Plug & Fly Virtualization: Automatic Detection of Virtual Machines for Adaptive Avionics Systems

Room: Majestic 4 | Samuel Queiroz (University of Stuttgart, Institute of Aircraft Systems), Björn Annighöfer (Universität Stuttgart)

2:00 PM - 2:30 PM

Utilizing Hash-Trees for Reliable, Extendable Plug & Fly Model Description

Best of Session

Room: Majestic 4 | Vanessa Tietz (Institute of Aircraft Systems, Universität Stuttgart), Raphael Rohrmueller (Universität Stuttgart), Bastian Luettig (Universität Stuttgart), Jens-Peter Kuehn (University of Stuttgart), Björn Annighöfer (Universität Stuttgart)

2:30 PM - 3:00 PM

PAL a Protocol Abstraction Layer for Self-adaptive Avionic Platforms

Room: Majestic 4 | Raphael Rohrmueller (Universität Stuttgart), Björn Annighöfer (Universität Stuttgart)

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: GNSS Threat Detection, Integrity & Resilience Testing

Session Chairs: Ryan Hale (The Boeing Company), Vijay Venkataraman (Cirrus Aircraft)

1:00 PM - 1:30 PM

A Scalable Multi-Layer GNSS Cybersecurity Testbed for Analyzing and Quantifying System-Level Impacts of Jamming and Spoofing in Aviation

Best of Session

Room: Majestic 6 | Zunayeed Bin Zahir (George Mason University), Antonio Ferreira Crespo (International Air Transport Association (IATA)), Alexandre De Barros Barreto (George Mason University)

1:30 PM - 2:00 PM

Standardized GNSS Resilience Testing for UAV Autopilots: A Two-Phase Testbed and labeled Dataset Framework

Room: Majestic 6 | Sivasankar Sibi (Embry-Riddle Aeronautical University, Daytona Beach), Lucas Saunders (Embry-Riddle Aeronautical University), Raju Dhakal (Embry-Riddle Aeronautical University), Laxima Niure Kandel (Embry-Riddle Aeronautical University, Daytona Beach)

2:00 PM - 2:30 PM

GNSS Integrity Monitoring Powered by LiDAR and Camera Aiding for Low Altitude Aerial Navigation

Room: Majestic 6 | Lorenzo Turci (Università degli Studi di Napoli Federico II), Flavia Causa (Università degli Studi di Napoli Federico II), Gennaromaria Crispino (University of Naples Federico II), Roberto Opromolla (Università degli Studi di Napoli Federico II), Luca Orsolillo (Honeywell), Federico Corrado (Honeywell), Roberto Senatore (Honeywell), Giancarmine Fasano (Università degli Studi di Napoli Federico II)

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: Architecture & Design

Session Chairs | Vincent Kuo (Metis Technology Solutions) Moslem Mo Kazemi (Merlin Labs & Pragmatic Robotics LLC)

1:00 PM - 1:30 PM

A Safety-Driven Architectural Framework for Fail-Operational Drone Swarms in Critical Missions

Room: Diamond 2 | Luiz Giacomossi (Mälardalen University), Zafer Yigit (Mälardalen University), Marwan Shakarna (Mälardalen University), Shoaib Saleemi (Mälardalen University), Ivan Tomasic (Mälardalen University), Baran Cürüklü (Mälardalen University), Håkan Forsberg (Mälardalen University)

1:30 PM - 2:00 PM

Combining multi-drone cooperation and A-PNT techniques for enhanced navigation in GNSS-challenging environments

Best of Session

Room: Diamond 2 | Gennaromaria Crispino (University of Naples Federico II), Lorenzo Turci (Università degli Studi di Napoli Federico II), Flavia Causa (Università degli Studi di Napoli Federico II), Giancarmine Fasano (Università degli Studi di Napoli Federico II)

2:00 PM - 2:30 PM

An Early-Warning System for Vision-Based Real-Time Collision Avoidance under Diverse Conditions

Room: Diamond 2 | Jia Shin (Gyeongsang National University), Uicheon Lee (Department of AI Convergence Engineering, Gyeongsang National University), Seonah Lee (Gyeongsang National University)

2:30 PM - 3:00 PM

Age-of-Information-Aware Decentralized Air Traffic Management for Infrastructure-Deprived UAV Operations

Room: Diamond 2 | Mehmet Ali Akinci, Hüseyin Kerem Aktaş

Track: CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)

Session: Tools for Data Management and Development

Session Chairs: Leonidas Kosmidis (Barcelona Supercomputing Center (BSC) & Universitat Politècnica de Catalunya (UPC))

1:00 PM - 1:30 PM

An Efficient Bidirectional Architecting Method for Safety-Critical Software and System Reuse

Room: Royal 3 | Haifeng Zhu (BAE Systems), Mark Carlson (BAE Systems), William Luk (BAE Systems), Peter Kiefer (BAE Systems), James Wankel (BAE Systems), Michael Manninen (BAE Systems), Michael Oberhausen (BAE Systems), Renato Sarti (BAE Systems), Bryce Hieber (BAE Systems)

1:30 PM - 2:00 PM

An Object-Oriented Data Model for Smart Cabin Technologies in Commercial Aviation

Room: Royal 3 | Jacqueline Bergmann (Institute of Flight Systems and Automatic Control, TU Darmstadt), Leonie Droll (Institute of Flight Systems and Automatic Control, Technical University of Darmstadt)

2:00 PM - 2:30 PM

Accelerating FPGA-Based Avionics System Recertification with Delta Verification Methodologies and Bitstream-Level Verification of Physical Isolation

Best of Session

Room: Royal 3 | Ali Asgar Sohanguhpurwala (Graf Research Corporation), Jonathan Graf (Graf Research Corporation), Evan Drinkert (Graf Research Corporation), Scott Harper (Graf Research Corporation), Margaret Winslow (Graf Research Corporation)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: Conflict Management, Separation, and Deconfliction

Session Chairs: Billy Josefsson (Linköping University LiU), Catharina Lindhold (Saab Group)

1:00 PM - 1:30 PM

Combining Strategic and Tactical Conflict Management in Urban Air Mobility Environments

Best of Session

Best of Track

Room: Silver | Laura Humphrey (NASA), César Muñoz (NASA Langley Research Center), María Consiglo (NASA Langley Research Center), George Hagen (NASA), James Chamberlain (AMA Inc), Marco Feliu (AMA Inc), Richard Jessop (AMA Inc)

1:30 PM - 2:00 PM

Horizontal Minimum Separation Boundary Using Detection and Avoidance Models for UAM Tactical Deconfliction

Room: Silver | Junsoo Kim (Korea Advanced Institute of Science and Technology), Gihun Nam (Korea Advanced Institute of Science and Technology), Jiyun Lee (Korea Advanced Institute of Science and Technology), Dongchan Min (Stanford University), Sam Pullen (Stanford University)

2:00 PM - 2:30 PM

Surveillance aware strategic path planning and deconfliction for Urban Air Mobility

Room: Silver | Flavia Causa (Università degli Studi di Napoli Federico II), Giancarmine Fasano (University of Naples Federico II)

2:30 PM - 3:00 PM

A Swarm-based Separation Assurance and Collision Avoidance System for Urban Air Mobility Operations

Room: Silver | Yuwen Yan (Northwestern Polytechnical University), Nour El Din Safwat (Khalifa University), Wenhao Bi (Northwestern Polytechnical University), An Zhang (Northwestern Polytechnical University), Roberto Sabatini (Khalifa University)

Track: AI TOOLS FOR AEROSPACE

Session: AI Tools and Assurance

Session Chairs: Darren Cofer (Collins Aerospace), Sebastian Gruber (Johannes Kepler Universität Linz)

3:30 PM - 4:00 PM

Balancing Product and Process Rigor for Practical Implementation of AI-enabled Capabilities

Room: Majestic 2 | Wes Ryan (Northrop Grumman)

4:00 PM - 4:30 PM

Assurance Considerations for AI-Based Reasoning Systems in Avionics

Best of Session

Best of Track

Room: Majestic 2 | Arthur Clavière (Collins Aerospace), Riccardo De Masellis (Collins Aerospace), Dmitrii Kirov (Collins Aerospace), Stefano Minopoli (Collins Aerospace), Simone Fulvio Rollini (Collins Aerospace)

4:30 PM - 5:00 PM

Convex Hull-Based Modeling of Neural Network Operational Design Domains for Formal Verification

Room: Majestic 2 | Cong Liu (Collins Aerospace), Darren Cofer (Collins Aerospace)

5:00 PM - 5:30 PM

How Much Assurance is Enough for AI? A Pragmatic Approach to Certifying AI in Airborne Systems.

Room: Majestic 2 | Konstantin Dmitriev (Technische Universität München), Johann Schumann (KBR Wyle Services LLC, NASA Ames Research Center), Florian Holzapfel (Technische Universität München)

Track: AVIONICS PLATFORMS

Session: Deterministic Avionics Networking and Ethernet Evolution

Session Chair: Samuel Thompson (Rapita Systems)

3:30 PM - 4:00 PM

Deterministic Software-Defined Networking for Safety-Critical Applications-- Towards Model-Based TSN Configuration Workflows

Room: Majestic 4 | Bastian Luettig (Universität Stuttgart), Florian Frick (University of Stuttgart), Mariann Homolya (University of Stuttgart), Janick Beck (German Aerospace Center DLR e.V.), Hubert Lambers (Airbus), Armin Lechler (University of Stuttgart), Björn Annighöfer (Universität Stuttgart)

4:00 PM - 4:30 PM

Open-Source Scheduler and Visualizer for a Synchronous and Deterministic Avionics Backbone

Best of Session

Room: Majestic 4 | Alexander Ahlbrecht (German Aerospace Center DLR e.V.), Janick Beck (German Aerospace Center DLR e.V.), Tim Schubert (German Aerospace Center (DLR)), Umut Durak (German Aerospace Center DLR e.V.), Roman Schmidt (Airbus Defence & Space GmbH, Manching), Nic Baer (Airbus Defence and Space GmbH), Heiko Engel (Rockwell Collins Deutschland GmbH, Collins Aerospace - An RT...), Klemens Korherr (Collins Aerospace | An RTX Business), Timo Reubold (Rockwell Collins Deutschland GmbH, Collins Aerospace - An RT...)

4:30 PM - 5:00 PM

Single Pair Ethernet Networks for Complexity and Cost Reduction in Future Aircraft Cabin Platforms

Room: Majestic 4 | Vincent Starke (Technische Universität Hamburg), Frank Thielecke (Hamburg University of Technology)

Track: AIR TRAFFIC MANAGEMENT (ATM)

Session: ATC Communications, Training, and Future Systems

Session Chair: Junichi Naganawa (Electronic Navigation Research Institute)

3:30 PM - 4:00 PM

**Air Traffic Control Speaker
Diarrization with Sortformer:
Offline and Streaming
Evaluation, Calibration, and
Lightweight Domain Adaptation**

Room: Majestic 3 | Shital Pandey
(Embry-Riddle Aeronautical
University), Jianhua Liu (Embry-
Riddle Aeronautical University)

4:00 PM - 4:30 PM

**Conflict Management in Flight
Centric ATC: Findings from a
Real-Time Simulation**

Best of Session

Room: Majestic 3 | Mara Weber
(German Aerospace Center DLR
e.V.), Verdiana Bottino (DLR e.V.),
Ana P.G. Martins (German
Aerospace Center DLR e.V.)

4:30 PM - 5:00 PM

**ASTRA: A Scalable Next-
Generation ATCO Training
Simulator with Autonomous
Simpilots**

Room: Majestic 3 | Ethan Chew,
Enjia Wu, Inruss Eng, Ian Lim,
Ranen Sim, Brandon Koh, Kaleb
Nim, Caden Toh, Wei Dong Soin,
Darius Koh, Galen Tay, Prannaya
Gupta, Jonathan Koong (Air
Emerging Technologies High-
Speed Experimentation and
Research (AETHER), RASF Agile
innovation Digital (RaiD), Republic
of Singapore Air Force (RSAF))
Yong Zhi Lim (RSAF Agile
Innovation Digital)

5:00 PM - 5:30 PM

**Structuring a single Air Traffic
Management system for Africa**

Room: Majestic 3 | Patrice
Zombré (ASECNA), Andréas
GUITART (ENAC), fabio Krykhtine
(Universidade Federal do Rio de
Janeiro), Oludolapo A.
Olanweraju (Durban University of
Technology), Daniel Delahaye
(Ecole Nationale de l'Aviation
Civile-ENAC), Felix Mora-Camino
(Durban University of
Technology)

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: Modeling & Sim for Operations

Session Chairs: Bjorn Andersson (Carnegie Mellon Software Engineering Institute), Olivia Beyer Bruvik (Stanford University)

3:30 PM - 4:00 PM

**Nonlinear Model
Predictive Control for Very-
Low-Altitude Trajectory-
Following of Rotorcraft
and Multicopters**

Room: Diamond 2 |
Maximilian Böck (University
of the Bundeswehr Munich),
Uli Utz (University of the
Bundeswehr Munich),
Matthias Gerdt (Universität
der Bundeswehr München)

4:00 PM - 4:30 PM

**Remote Pilot-in-the-Loop
Simulation Testing with ACAS Xr
in the Terminal Area**

Room: Diamond 2 | Robert
Rorie (NASA Ames Research
Center), Casey Smith (NASA
Ames Research Center),
Jeremy Marquis (NASA)

4:30 PM - 5:00 PM

**AeroGuardian: From UAS
Sighting Reports to Simulation-
Validated Safety Intelligence**

Best of Session

Room: Diamond 2 | DET VIRAK
(Gyeongsang National University),
Seonah Lee (Department of AI
Convergence Engineering,
Gyeongsang Nationa...)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: Operations Planning, Network Performance, and Sustainability

Session Chairs: Billy Josefsson (Linköping University LiU), Catharina Lindholm (Saab Group)

3:30 PM - 4:00 PM

**Optimizing Urban Air Mobility
Fleet Size under Operational
Constraints**

Best of Session

Room: Silver | Je Yeon Kim (Korea
Aerospace University), Sang Hyun
Kim (Korea Aerospace University),

4:00 PM - 4:30 PM

**SAMO: A Simulator to Analyze
Urban Air Mobility Operations**

Room: Silver | Kirti Nikam (Tata
Consultancy Services Limited),
Shubham Arle (Tata Consultancy
Services Limited), Yashovardhan
Chati (Tata Consultancy Services),
Arunchandar Vasani (Tata
Consultancy Services Limited),

4:30 PM - 5:00 PM

**Intelligent Hybrid Power and
Propulsion Management for Safe
and Sustainable Advanced Air
Mobility**

Room: Silver | Ahmed Elmeligy
(Khalifa University), Alanoud
Almurshidi (Khalifa University),
Nour El Din Safwat (Khalifa
University), Safa Nizhamudeen
(Khalifa University), Roberto
Sabatini (Khalifa University)

Track: AVIONICS TECHNOLOGIES

Session: Prognostic and Health Management

Session Chair: Shital Pandey

3:30 PM - 4:00 PM

Design Improvements of Signal Amplification and Output Circuits in a Multi-Channel SHM Data Acquisition Unit

Room: Majestic 5 | KyoungChoon Park (Aeromaster Corporation), WonJae Choi (Aeromaster Corporation), GyeongMin Baek (Aeromaster Corporation)

4:00 PM - 4:30 PM

MoST-AD: Mode-Aware Spatio-Temporal Anomaly Detector for Aircraft Warning Lights with Controllable Text-to-Video Failure Scenario Generation

Room: Majestic 5 | Jeongheon Seo (Gyeongsang National University), Gwanho Kim (Gyeongsang National University), Seoktae Lee (Korea Aerospace Industries), Euteum Choi (Gyeongsang National University), Seongjin Lee (Gyeongsang National University)

4:30 PM - 5:00 PM

Assessing Methods for the Automatic Physical-to-Logical Mapping of Aircraft Cabin Network Components via Onboard Video Systems

Best of Session

Room: Majestic 5 | Bastian Luettig (Universität Stuttgart), Jens-Peter Kuehn (University of Stuttgart), Xinyu Fan (University of Stuttgart), Christian Hertwig (Airbus), Christoph Tillack-Nieveler (Airbus Operations GmbH), Björn Annighöfer (Universität Stuttgart)

5:00 PM - 5:30 PM

A Simulation Study of Private 5G RedCap for Wireless Avionics Intra-Communications

Room: Majestic 5 | Anudeep Karnam (Eindhoven University of Technology), Ankith Vinayachandran (Eindhoven University of Technology), Jobish John (TNO), Kishor C. Joshi (Eindhoven University of Technology), George Exarchakos, Sonia Heemstra de Groot (Eindhoven University of Technology), Ignas Niemegeers (Eindhoven University of Technology)

Track: HUMAN FACTORS

Session: Security, Cyber Resilience, and Safety Analytics

Session Chair: Jan Boril (University of Defense)

3:30 PM - 4:00 PM

The Mechanical Illusion: How Professional Pilots Interpret Cyber Threats and Ambiguous Anomalies in Modern Flight Decks?

Best of Session

Room: Diamond 1 | Hans OBAS (Polytechnique Montreal), Felipe Gohring de Magalhaes (Polytechnique Montreal), Philippe Doyon-Poulin (Polytechnique Montreal), Gabriela Nicolescu (Ecole polytechnique montreal)

4:00 PM - 4:30 PM

Hybrid conflicts and avionics systems: cognitive attacks characterization

Room: Diamond 1 | Benoît Lamirault (IMS Laboratory), Benoit LE BLANC (Bordeaux INP-ENSC, IMS UMR 5218, Université de bordeaux, CNRS), Yves DEMAIZEAU (CNRS, LIG UMR 5217, Université de Grenoble), Jean-Marc ANDRE (Bordeaux INP-ENSC, IMS UMR 5218, Université de bordeaux, CNRS)

4:30 PM - 5:00 PM

From data to Causality: Bayesian modeling of an aviation safety database for identifying causal relationships of flight diversion

Room: Diamond 1 | Lara Ramos (Aeronautics Institute of Technology), Carlos Ribeiro (Aeronautics Institute of Technology), Paula Cerdeira (Embraer)

Track: AI APPLICATIONS FOR AEROSPACE

Session: Reinforcement and Deep Learning for Air Operations

Session Chairs: Chester Dolph (NASA Langley Research Center), Srushti Desai (GE Aerospace), Matthew Murakami (GE Aerospace Research), Sarat Chandra Varanasi (GE Aerospace)

3:30 PM - 4:00 PM

A Topology-Informed Deep Architecture for Efficient Multi-Modal Learning of Integrated Aerospace Traffic Management

Room: Majestic 1 | Paul Schrader (Air Force Research Laboratory - Information Directorate), Erik Blasch (Air Force Office of Scientific Research (AFOSR)), Hongzhi Guo (University of Nebraska - Lincoln)

4:00 PM - 4:30 PM

Reinforcement Learning-Based Autonomous Escort and Corridor Cleaning Strategies For Manned-Unmanned (MUM-T) Missions

Best of Session

Room: Majestic 1 | Serdar Gökdemir (Istanbul Technical University), Gökhan İnalan (Istanbul Technical University)

4:30 PM - 5:00 PM

Examining AI Reinforcement Learning: From Drone Flight Simulation to Vintage Games on Modern CPUs and GPUs

Room: Majestic 1 | John Ross (U.S. Army Combat Capabilities Development Command Aviation), Chase Blakey (Intuitive Research and Technology Corporation), William Vance (TriVector Services, Inc.), Roshini Ashok (US Army DEVCOM AvMC), Hugh Turner (Brockwell Technologies, Inc)

Track: CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)

Session: Software and Modelling Topics

Session Chairs: Christin Rauche (GE Aerospace), Wanja Zaeske (German Aerospace Center DLR e.V.)

3:30 PM - 4:00 PM

GLIDE: A Generalized Layered Integrated Delta Evaluation Framework for Aircraft Software Threat Modeling

Room: Royal 3 | Hosam Badreldin (Thales InFlyt Experience), Haiyan Li (Thales), Prathap Reddy Kudor (Thales InFlyt Experience), Akshaya KIZHKKENCHERRY (Thales InFlyt Experience)

4:00 PM - 4:30 PM

Efficient Binary Micro-Patching for Legacy and Safety-Critical Avionics Systems

Best of Session

Room: Royal 3 | Payas Awadhutkar (ENSOFTE), Ahmed Tamrawi (ENSOFTE), Jeremías Saucedo (ENSOFTE)

4:30 PM - 5:00 PM

Improving Flight Control Software Design with Automatic Model Translation and Synthesis

Room: Royal 3 | Goncalo Thums (Embraer SA), Ricardo Bedin Franca (EMBRAER S. A.), John Macauley (Synopsis)

5:00 PM - 5:30 PM

Codifying and Enforcing Ada Coding Standards with GNATCheck Integrated into GitLab CI/CD

Room: Royal 3 | Katia Maier dos Santos (Embraer), Matheus Carvalho Nali (Embraer), Bruno Basso Brandani (Embraer), Douglas De Moura (Embraer)

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: Time-Sensitive Networking & Communication Networks

Session Chairs: Chester Dolph (NASA Langley Research Center), Moslem Mo Kazemi (Merlin Labs Inc.)

3:30 PM - 4:00 PM

Towards Cyber-Resilient Time-Sensitive Networking for Aerospace Systems

Best of Session

Room: Majestic 6 | Baoluo Meng (GE Aerospace), Sarat Chandra Varanasi (GE Aerospace), Stephen Bush (GE Aerospace Research), Saswata Paul (GE Aerospace), Abdul Jabbar (GE Aerospace Research), Michael Durling (GE Aerospace Research)

4:00 PM - 4:30 PM

Application of Link Monitoring and Fallback Functions in Hybrid Communications Network for Next-Generation of Aeronautical Data Links

Room: Majestic 6 | Fadhil Firyaguna (Collins Aerospace Ireland, Limited), Giancarlo Gelao (Collins Aerospace Ireland Ltd.), Marco Carloni (Collins Aerospace), Stephane Pelleschi (Collins Aerospace), Philip Harris (Collins Aerospace)

4:30 PM - 5:00 PM

An Intrusion Detection System for IEEE 802.1Qbv-Based Time Sensitive Networks

Room: Majestic 6 | Mustafa Emir Peker (ASELSAN), Mustafa Evcil (ASELSAN A.Ş.), Yiğit Emir İşıkçı (ASELSAN), İsa Can Babir (ASELSAN), Selami Utku Yüce (Aselsan), Yiğit Çevik (Aselsan)

Session: Poster Session

Session Chairs: Mike Durling (GE Aerospace Research), Marc Gatti (Thales AVS France SAS)

POSTER - AI APPLICATIONS FOR AEROSPACE
System Level Fault Diagnosis of Jet Aircraft Fuel Transfer Pumps Using Flight-Test and Rig-Test Data

Room: Foyer | Dohyeon Kim (Seoul National University), Semin Ahn (Seoul National University), Wansuk Yang (Korea Aerospace Industries, LTD.), Yongmin Lee (Korea Aerospace Industries, LTD.), Jihan Kim (Korea Aerospace Industries, LTD.), Seonho Jeong (Korea Aerospace Industries, LTD.), Ikgyu Lee (Korea Aerospace Industries, LTD.), Sung-Hoon Ahn (Seoul National University)

POSTER - AI APPLICATIONS FOR AEROSPACE
AI-Based Fault Diagnosis and Prognosis for Jet Aircraft Fuel Supply Pumps Using Flight-Test and Rig-Test Data

Best of Session

Room: Foyer | Semin Ahn (Seoul National University), Dohyeon Kim (Seoul National University), Wansuk Yang (Korea Aerospace Industries, LTD.), Yongmin Lee (Korea Aerospace Industries, LTD.), Jihan Kim (Korea Aerospace Industries, LTD.), Seonho Jeong (Korea Aerospace Industries, LTD.), Ikgyu Lee (Korea Aerospace Industries, LTD.), Sung-Hoon Ahn (Seoul National University)

POSTER - AI TOOLS FOR AEROSPACE
Root-Pacing Curriculum Learning for Multiple Fault Management in ECS

Room: Foyer | Rodolfo Luiz Mendonca Sales (ITA- Aeronautics Institute of Technology), Carlos Ribeiro (Aeronautics Institute of Technology)

POSTER - AIR TRAFFIC MANAGEMENT (ATM)
Securing ADS-B with Byzantine Fault Tolerance: Towards A Formal Specification

Room: Foyer | Siew Goh (RPI), Carlos Varela (Rensselaer Polytechnic Institute)

POSTER - COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS
ADS-B Data Analysis for Investigating the Effect of Altitude Types on Drone Operation Management

Room: Foyer | Junichi Naganawa (Electronic Navigation Research Institute), Daichi Toratani (Electronic Navigation Research Institute)

POSTER - AVIONICS PLATFORMS
Aerospace Industry benefits of Next Generation of ARINC 664 Part 7A

Room: Foyer | Brent Nelson (Collins Aerospace), Jamie Zaehring (Collins Aerospace), Nels Waineo (Collins Aerospace), Joshua Byrne (Collins Aerospace), Sean Ramey (Boeing Commercial Airplanes), Dave Matthews (Boeing Company), Valentin Kretschmar (Airbus), Pierre-Julien Chaine (Airbus)

POSTER - AVIONICS PLATFORMS
Resilient Hybrid Control Architectures for UAVs: Analog-Digital Autonomy in Electromagnetically Contested Environments

Room: Foyer | Pranav Maheshwaran (LASA - Liberal Arts and Science Academy)

POSTER - CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)
A Model-Based Approach to ED-203A/DO-356A Security Risk Assessments using Attack Trees with Effectiveness of Protection evaluations

Room: Foyer | Nils Heuermann (Synopsys), Sina Hashemi (Synopsys), John Macauley (Synopsys)

POSTER - URBAN, ADVANCED AIR MOBILITY & NEW SPACE
Modern Control of Electric Propulsion Systems for Unmanned Aerial Vehicles

Room: Foyer | Gabriel Francischetti (Instituto de Tecnologia Aeronautica)

POSTER - AI APPLICATIONS FOR AEROSPACE
Predicting Remaining Useful Life of Avionics Using a Multilayer Neural Network

Room: Foyer | Juan Marin (Intergalactic)

Track: AVIONICS PLATFORMS

Session: Certification, Assurance, and Compliance Frameworks

Session Chairs: Baoluo Meng (GE Aerospace), Harold Tiedeman (Collins Aerospace)

10:30 AM - 11:00 AM

Certification and Architectural Implications of Common vs Domain-Specific Platform Stacks in Mixed-Criticality Integrated Modular Avionics

Best of Session

Room: Majestic 4 | Mohamad Ibrahim (German Aerospace Center (DLR)), Bastian Luettig (German Aerospace Center), Umut Durak (German Aerospace Center DLR e.V.)

11:00 AM - 11:30 AM

Integrated Serverless Avionics: Runtime Implementation on seL4

Room: Majestic 4 | Sven Friedrich (German Aerospace Center DLR e.V.), Tim Schubert (German Aerospace Center (DLR)), Umut Durak (German Aerospace Center DLR e.V.)

11:30 AM - 12:00 PM

Terms, Concepts, and Incompatibilities of Machine Learning with Aircraft Type Certification

Room: Majestic 4 | Robert Voros (Merlin Labs Inc)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: Data, Communications, and AI-Enabled Infrastructure

Session Chairs: Aharon David (AFuzion), Benjamin Lochow (Technische Universität Berlin)

10:30 AM - 11:00 AM

AVGSO: A Visual Geo-Localization Dataset for Autonomous Aerial Navigation

Room: Silver | Mohammed Behnia (North Carolina Agricultural and Technical State University), Parham Kebria (NC A&T State University)

11:00 AM - 11:30 AM

Large-Scale UAV-to-UAV Signal Strength Coverage Map Prediction Using a Stacked U-Net

Best of Session

Room: Silver | Abdullah Althuwaini (University of Central Florida), Adan Vela (University of Central Florida)

11:30 AM - 12:00 PM

Scaling Realistic Flight Simulation and Data Synthesis with Generative 3D Reconstruction and Automatic Annotation

Room: Silver | Can Vu (George Washington University), Peng Wei (George Washington University)

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: Hybrid & Alternative Positioning

Session Chairs | Flavia Causa (Università degli Studi di Napoli Federico II), Robert McCullen (Cirrus Aircraft)

10:30 AM - 11:00 AM

Turning Weakness into Strength:
Leveraging Poor Satellite
Geometries to Mitigate Urban
GNSS Multipath Errors

Room: Majestic 6 | Julian Gutierrez
(NASA Langley Research Center),
Tanner Slagel (NASA Langley Research
Center), Evan Dill (NASA Langley
Research Center)

11:00 AM - 11:30 AM

4G LTE Time Difference of Arrival-
Based Positioning Algorithm in
Urban Aeras using Super
affordable Hardware

Best of Session

Room: Majestic 6 | François Drapeau
(LASSENA), Antoine Davi (École
de technologie supérieure), Ahmad
Esmaeilkhah (LASSENA Laboratory,
Department of Electrical Engineering
Éco...), Jean-Marc Gagne (LASSENA
Laboratory, École de Technologie
Supérieure), Rene Jr. Landry (École de
Technologie Supérieure)

11:30 AM - 12:00 PM

5G-Based Aircraft Tracking and
Positioning in Integrated A2G & HAPS
Networks Toward 6G

Room: Majestic 6 | Alex Ganau Sanchez
(Collins Aerospace), Hamada Alshaer
(Collins Aerospace)

Track: AVIONICS TECHNOLOGIES

Session: Model-Based Engineering, Architecture, and Certification

Session Chair: KyoungChoon Park (Aeromaster Corporation)

10:30 AM - 11:00 AM

IMPAKT: Interconnected, Model-Based Data
Pool for Avionics Knowledge Management

Room: Majestic 5 | Vanessa Tietz (Insitute of
Aircraft Systems Universität Stuttgart), Martin
Halle (Hamburg University of Technology),
Björn Annighöfer (Universität Stuttgart),
Frank Thielecke (Hamburg University of
Technology)

11:00 AM - 11:30 PM

Reusability for System-in-Package: Challenges
in Aeronautical Certification Context

Best of Session

Room: Majestic 5 | Joseph Adelaide (Safran
Electronics & Defense), Henri Bollon (Safran
Electronics & Defense),
Frédéric Boniol (ONERA), Eric Debes (Thales
Group), David Deschans
(Thales Canada Avionics), Antoneta Fabre
(Airbus), Anthony Fernandes Pires (ONERA),
Jean-Christophe
Jammes (Safran Electronics & Defense), Franck
Jeulin (Thales Group), François Leroy (Safran
Electronics & Defense),
Laurent Marianne (Safran Electronics &
Defense), Alfonso Mascarenas Gonzalez
(ONERA), Christophe Vlacich
(Airbus), Julia Olivier (Safran Electronics &
Defense)

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: Performance Analysis

Session Chairs | Darren Cofer (Collins Aerospace), Andrew Videmask (Reliable Robotics)

10:30 AM - 11:00 AM

A Visual Analytics Framework for Post-Flight
Drone Anomaly Investigation

Room: Diamond 2 | D. Shane Elliott (School of
Computer Science, University of Oklahoma),
Debra Hogue (76 Software Engineering Group,
United States Air Force, Univ...), Ghulam Jilani
Quadri (University of Oklahoma)

11:00 AM - 11:30 AM

Impact of Formation Geometric Stability on
Gradient Estimation Reliability in Cooperative
Source Seeking by Unmanned Aircraft Systems

Best of Session

Room: Diamond 2 | Jung Min Kang (Korea
Aerospace University), Sang
Hyun Kim (Korea Aerospace University)

11:30 AM - 12:00 PM

A Hardware Trojan Evaluation Testbed Design
Framework for UAV Flight Controllers

Room: Diamond 2 | Paul Calzada (University of
Florida), Md Sadik Awal (Florida International
University), Md Tauhidur Rahman (Florida
International University), Mark Tehranipoor
(University of Florida)

Track: CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)

Session: System and Safety Design and Modelling

Session Chairs: Anika Christmann (IDA, TU Braunschweig), Sven Friedrich (German Aerospace Center DLR e.V.)

10:30 AM - 11:00 AM

Using SysML v2 and a Customizable Digital Engineering Methodology to Engineer Safe and Secure Digital Avionics Systems

Room: Royal 3 | Bernard Dion (ANSYS), Guilherme Goretin (Ansys), John Macauley (Ansys (part of Synopsys)), Jerome Hugues (Galois), Aditya Zutshi (Galois)

11:00 AM - 11:30 AM

Model-Based Safety Analysis of a Power Distribution System in a Hybrid Fly-by-Wire Light Sport Aircraft

Room: Royal 3 | Johannes Bender (Institute of Flight System Dynamics, Technical University of...), Nils Schlautmann (Technical University of Munich, Institute of Flight System Dynamics), Florian Holzapfel (Technische Universität München)

11:30 AM - 12:00 PM

From Architecture to Binary: Ensuring Cross-Domain Consistency in Model-Based Airborne Software Development

Best of Session

Room: Royal 3 | Nils Schlautmann (Technical University of Munich, Institute of Flight System Dynamics), Viktor Sinitsyn (Technical University of Munich), Benjamin Engelhard (Technical University of Munich), Florian Holzapfel (Technische Universität München)

Track: HUMAN FACTORS

Session: Trust, Certification, and Human-Centered AI

Session Chair: Julia Beckel (FAA)

10:30 AM - 11:00 AM

Integrating the Human Factor into the Certification of AI Systems in Aeronautics: A Contribution of Knowledge Management and STPA

Room: Diamond 1 | Théodore Letouzé (IMS Laboratory), Jean-Marc Andre (IMS Laboratory UMR CNRS 5218, Bordeaux INP-ENSC), Jaime Diaz-Pineda (Thales AVS), Coralie Vennin (XpLearn)

11:00 AM - 11:30 AM

Building Operator Trust Through Mixed-Initiative Camouflage Analysis for Surveillance

Room: Diamond 1 | Debra Hogue (76 Software Engineering Group, United States Air Force, Univ...), D. Shane Elliott (School of Computer Science, University of Oklahoma), Ghulam Jilani Quadri (University of Oklahoma)

11:30 AM - 12:00 PM

Experimental Investigations of Human Trust Determinants during Human-Systems Interaction

Best of Session

Room: Diamond 1 | Léa Mathieu (ISAE-SUPAERO - 10 Avenue Marc Pelegrin 31400 Toulouse), Patrick Mazoyer (THALES AVS SAS), Florence De Grancey (THALES AVS SAS), Jean-Christophe Sarrazin (ONERA), Bertille Somon (ONERA), Nicolas Drougard (ISAE SUPAERO)

Track: AIR TRAFFIC MANAGEMENT (ATM)

Session: UAM/UAS Traffic Management and Separation Assurance

Session Chair: Christoph G. Schuetz (Johannes Kepler Universität Linz)

10:30 AM - 11:00 AM

Runtime Safety Filtering for Learned Small UAS Separation Policies under GNSS Degradation

Best of Session

Best of Track

Room: Majestic 3 | Alex Zongo (George Washington University), Peng Wei (George Washington University)

11:00 AM - 11:30 AM

ETA Coordination at UAM Corridor Merging Points Using Worst-Case and Stochastic Trajectory Bounds

Room: Majestic 3 | Sasinee Pruekprasert (The University of Tokyo), Shinji Nakadai (Intent Exchange, Inc.), Katsuhiro Nishinari (The University of Tokyo)

11:30 AM - 12:00 PM

Evaluating Distributed Sensing for Decentralized Urban Air Mobility Traffic Management

Room: Majestic 3 | Rajagopal Sugumar (Embry-Riddle Aeronautical University), Jose Alejandro Gonzalez Nunez (Embry-Riddle Aeronautical University), Ilhan Akbas (Embry-Riddle Aeronautical University)

Track: AI TOOLS FOR AEROSPACE

Session: AI Tools and Applications

Session Chairs: Konstantin Dmitriev (Technische Universität München), Cong Liu (Collins Aerospace)

1:00 PM - 1:30 PM

Design and Validation Framework Applied to an ML-based Embedded System for Automating Helicopter Emergency Stop Maneuvers

Room: Majestic 2 | Gabriel Pedroza (Synopsys), Guilherme Goretkin (Synopsys), Matthieu Paquet (Synopsys), David Neckels (Synopsys), Vincent Ducros (Synopsys), Vincent Rossignol (Synopsys), Gunther Siegel (Synopsys), Bernard Dion (Synopsys), Dennis Rusin (Lynx), Sukrut Patwardhan (Lynx), Ethan Salehi (Lynx)

1:30 PM - 2:00 PM

LLM-Guided Synthetic Data Generation for GPS Spoofing Detection in Commercial Aviation

Room: Majestic 2 | Nina Sutre (Ecole Polytechnique de Montreal), Rim Zrelli (Ecole Polytechnique de Montreal), Gabriela Nicolescu (Ecole Polytechnique de Montreal), Felipe Gohring de Magalhaes (Polytechnique Montreal)

2:00 PM - 2:30 PM

Mechanistic Interpretability for Learning Assurance of a Vision-Based Landing System

Best of Session

Room: Majestic 2 | Romeo Valentin (Stanford University), Olivia Beyer Bruvik (Stanford University), Marc Schlichting (Stanford University), Mykel Kochenderfer (Stanford University)

2:30 PM - 3:00 PM

Next-Generation Multi-Core Verification: Synergizing Static-Dynamic Metrics with Airworthiness-Engineering AI Inference for Safety-Critical Aviation

Room: Majestic 2 | Alex Lim (LDRA Technology, Inc.), Roshini Ashok (US Army DEVCOM AvMC), John Ross (U.S. Army Combat Capabilities Development Command Aviation &...), William Vance (TriVector Services, Inc.), Hugh Turner (Brockwell Technologies, Inc), Stephen Di Camillo (LDRA Technology, Inc.), Jay Thomas (LDRA Technology, Inc.), Chase Blakey (Intuitive Research and Technology Corporation)

Track: AIR TRAFFIC MANAGEMENT (ATM)

Session: Digital Twins, Operational Prediction, and Performance Monitoring

Session Chairs: Jens Schiefele (Technical University Darmstadt), Praveen Kumar Selva (German Aerospace Center DLR e.V.)

1:00 PM - 1:30 PM

Fuel Burn Prediction on a Flight-by-Flight Basis Using an Encoder-Decoder LSTM Architecture

Best of Session

Room: Majestic 3 | Samet Ayhan (Boeing Company), Ítalo Romani de Oliveira (Boeing Company), Pablo Costas Álvarez (Boeing Company)

1:30 PM - 2:00 PM

Real-Time Event-Driven Prediction of Departure Delay Distributions for Operational Support in Airline Networks

Room: Majestic 3 | Professur für Technologie und Luftver (TU Dresden), Hartmut Fricke (Chair of Air Transport Technology and Logistics, Institute of Logistics and Aviation, Technische Universität Dresden (TU Dresden))

2:00 PM - 2:30 PM

VEHSI: A Fast-Time Simulation Digital Twin for Rapid En-Route Concept Validation using Open-Source ADS-B Data

Room: Majestic 3 | Dagh Zeppenfeld (German Aerospace Center (DLR)), Wilfried Baudouin Ngoune Tsaka (German Aerospace Center (DLR)), Meilin Schaper (German Aerospace Center DLR e.V.)

2:30 PM - 3:00 PM

Analysis of Annual Enroute Operations in the DC Airspace (2025)

Room: Majestic 3 | Ashim Thapa (George Mason University), Lance Sherry (George Mason University)

Track: HUMAN FACTORS

Session: Human-Autonomy Teaming in Search and Reduced-Crew Operations

Session Chair: Michael Dorneich (Iowa State University)

1:00 PM - 1:30 PM

Task Analysis for Human-Autonomy Teaming in Helicopter Search and Rescue Operations

Room: Diamond 1 | Kairat Khismetzhn (Polytechnique Montreal), Nico Helie (Polytechnique Montréal), Balvinder Singh (Polytechnique Montréal), Sion Jennings (National Research Council Canada), Jerome Le Ny (Polytechnique Montréal), Philippe Doyon-Poulin (Polytechnique Montreal)

1:30 PM - 2:00 PM

Drone Co-Pilot: User Interface for Search and Rescue Operations with an Autonomous Drone

Best of Session

Room: Diamond 1 | Balvinder Singh (Polytechnique Montréal), Nico Helie (Polytechnique Montréal), Kairat Khismetzhn (Polytechnique Montreal), Sion Jennings (National Research Council Canada), Philippe Doyon-Poulin (Polytechnique Montreal)

2:00 PM - 2:30 PM

A Collaborative U-space-Air Traffic Control Interface for Integrated Crewed and Uncrewed Air Traffic Situational Awareness and Decision Making

Room: Diamond 1 | Praveen Kumar Selvam (German Aerospace Center DLR e.V.), Gunnar Schwoch (German Aerospace Center (DLR)), Michael Rudolph (Institute of Flight Guidance, German Aerospace Center (DLR))

Track: AI APPLICATIONS FOR AEROSPACE

Session: Human-AI Teaming and Digital Engineering for Avionics

Session Chairs: Sharad Dixit (GE Aerospace Research), Michael Dorneich (Iowa State University)

1:00 PM - 1:30 PM

Digital Avionics Operations in Mission Simulation: an AI-assisted MBSE Modeling Approach

Best of Session

Room: Majestic 1 | Murillo Szvaticsek (Aeronautics Institute of Technology), Cesar Augusto Cavaleiro Marcondes (Aeronautics Institute of Technology), Denis Loubach (Aeronautics Institute of Technology)

1:30 PM - 2:00 PM

LLM Copilot: Assisting Single Pilot Operations Using Large Language Model Agents

Room: Majestic 1 | Ryan Bowers (Georgia Institute of Technology), Jose Magalhaes (Georgia Institute of Technology), David Feder (Georgia Institute of Technology)

2:00 PM - 2:30 PM

Applying The Multi-Kernel Execution (MKE) Methodology To Multi-Nodal Artificial Intelligence Agents For Multi-Core Validation

Room: Majestic 1 | John Ross (U.S. Army Combat Capabilities Development Command Aviation &...), Hugh Turner (Brockwell Technologies, Inc), William Vance (TriVector Services, Inc.), Chase Blakey (Intuitive Research and Technology Corporation), Roshini Ashok (US Army DEVCOM AvMC)

2:30 PM - 3:00 PM

Counterfactual XAI for Supervised Anomaly Detection in ADS-B

Room: Majestic 1 | Mustafa Emir Peker (ASELSAN), Selami Utku Yüce (Aselsan), İsa Can Babir (ASELSAN), Yiğit Emir İşıkçı (ASELSAN), Mustafa Evcil (ASELSAN A.Ş.), Yiğit Çevik (Aselsan)

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: Safety and Assurance

Session Chairs: Laxima Niure Kandel (Embry-Riddle Aeronautical University, Daytona Beach), Moslem Mo Kazemi (Merlin Labs Inc. & Pragmatic Robotics LLC)

1:00 PM - 1:30 PM

Integration of formal methods in the development of a language for autonomous spacecraft operations

Room: Diamond 2 | Lauren White (NASA Langley Research Center), César Muñoz (NASA Langley Research Center), Marco Feliu (AMA Inc),

1:30 PM - 2:00 PM

Runtime Monitoring of Flight Controllers in the Presence of Actuator Dynamics using Extended Incremental Control Inequalities

Best of Session

Room: Diamond 2 | Hannes Hofsäß (Technische Universität München),

2:00 PM - 2:30 PM

Use of System-Theoretic Process Analysis (STPA) in Deriving Certifiable Command and Control (C2) Link Performance Requirements for UAS

Room: Diamond 2 | Peng (Daniel) Ji (Wisk Aero Canada)

Track: AVIONICS PLATFORMS

Session: Open Architectures, UAV Platforms, and Deployment Workflows

Session Chair: Christin Rauche (GE Aerospace)

1:00 PM - 1:30 PM

Architecture of a Modular Data Collection System for Multi-Missions

Room: Majestic 4 | Gabriel Francischetti (Istituto de Tecnologia Aeronautica)

1:30 PM - 2:00 PM

Future Platform Architectures to Enable Computationally Intensive Applications like Advanced Aircraft Condition Monitoring

Room: Majestic 4 | Martin Halle (Hamburg University of Technology), Frank Thielecke (Hamburg University of Technology)

2:00 PM - 2:30 PM

Containing AI Workloads in Safety-Critical Avionics Using Separation Kernels

Room: Majestic 4 | Ethan Salehi (Lynx), Patrick Deiber (Lynx Software Technology), William Keegan (Lynx Software Technology), Scott Engle (Lynx Software Technology), James Deutch (Lynx Software Technology)

2:30 PM - 3:00 PM

An Extended Integration Workflow for Model-Based Flight Controller Deployment on ARINC 653 Platforms

Best of Session

Room: Majestic 4 | Jacob Kriegel (German Aerospace Center - Deutsches Zentrum für Luft- und Raumfahrt (DLR)), Bojan Lukić (German Aerospace Center DLR e.V.), Matthias Klimmek (SYSGO GmbH), Umut Durak (German Aerospace Center DLR e.V.)

Track: CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)

Session: Security Analysis, Modelling and Solutions

Session Chairs: Aharon David (AFuzion), Martial Montrichard (Metavonics)

1:00 PM - 1:30 PM

Comparative Performance Analysis of Cryptographic Workloads in Cyber-Physical Avionics

Best of Session

Best of Track

Room: Royal 3 | Jeremiah Webb (Embry-Riddle Aeronautical University), Laxima Niure Kandel (Embry-Riddle Aeronautical University, Daytona Beach), Deepti Gupta (Texas A & M University - Central Texas), Raju Dhakal (Embry-Riddle Aeronautical University)

1:30 PM - 2:00 PM

Aviation Air-Ground Security: Current Vulnerabilities and Post-Quantum Requirements

Room: Royal 3 | Nicolas Buchmann (Fraunhofer), Marcos Cabañas Maldonado (TU Delft), Michael Felux (Zurich University of Applied Sciences), Xavier Olive (ONERA), Martin Strohmeier (armasuisse), Junzi Sun (Delft University of Technology), Allan Tart (The OpenSky Network), Manuel Waltert (Zurich University of Applied Sciences)

2:00 PM - 2:30 PM

Graph-Based Design Space Exploration for Lifetime Security in Avionics Systems-on-Chip: Feature Selection, Policy Synthesis, and Topology Analysis

Room: Royal 3 | Abigail Butka, Brian Butka (Embry-Riddle Aeronautical University)

2:30 PM - 3:00 PM

Performance Impact of Cyber-security Measures for Self-adaptive Avionics Communication Protocols

Room: Royal 3 | Mario Werthwein (Universität Stuttgart), Raphael Rohrmueller (Universität Stuttgart), Björn Annighöfer (Universität Stuttgart)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: Sensing, Tracking, and Secure Sense-and-Avoid

Session Chairs: Ryan Hale (The Boeing Company), Billy Josefsson (Linköping University LiU)

1:30 PM - 2:00 PM

**Remote ID Spoofing-Aware
Trajectory Planning for Small
Unmanned Aerial Systems**

Room: Silver | Jeremiah Webb (Vanderbilt), Bryce Bjorkman (Vanderbilt), Abel Diaz Gonzalez (Vanderbilt), Austin Coursey (Vanderbilt), Noah Dahle (Vanderbilt), Kailani Lemieux Mack (Vanderbilt), Filippos Fotiadis (The University of Texas at Austin), Gautam Biswas (Vanderbilt), Bryan Ward (Vanderbilt), Abenezer Taye (Vanderbilt)

2:00 PM - 2:30 PM

**Airborne Radar Tracking for
enhanced UAS Safety and
Airspace Awareness**

Room: Silver | Federica Vitiello (Università degli Studi di Napoli Federico II), Flavia Causa (Università degli Studi di Napoli Federico II), Roberto Opromolla (Università degli Studi di Napoli Federico II), Giancarmine Fasano (Università degli Studi di Napoli Federico II), Chester Dolph (NASA Langley Research Center), Todd Ferrante (NASA Langley Research Center), Thomas Lombaerts (KBR Wyle Services LLC, NASA Ames Research Center), Corey Ippolito (NASA Ames Research Center)

2:30 PM - 3:00 PM

**Integrity Aware Vision Based
Tracking for Advanced Air
Mobility Detect and Avoid**

Best of Session

Room: Silver | Eyuel Tariku (Khalifa University), Nour El Din Safwat (Khalifa University), Khaja Faisal Hussain (Khalifa University of Science and Technology), Farah Tarek (Khalifa University of Science and Technology), Roberto Sabatini (Khalifa University)

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: Surveillance & Sensor Fusion

Session Chairs: Adil El Abbazi (Thales), Luca Manica (Collins Aerospace)

1:00 PM - 1:30 PM

**Non-Cooperative
Airport Ground
Surveillance using Low-
SWaP Radars and
Visual Cameras**

Room: Majestic 6 | Federica Vitiello (Università degli Studi di Napoli Federico II), Paolo Veneruso (Università degli Studi di Napoli Federico II), Enrico Miccio (Università degli Studi di Napoli Federico II), Flavia Causa (Università degli Studi di Napoli Federico II), Roberto Opromolla (Università degli Studi di Napoli Federico II), Giancarmine Fasano (Università degli Studi di Napoli Federico II), Luca Manica (Collins Aerospace)

1:30 PM - 2:00 PM

**Optimal Fault-Tolerant and
Interference-Aware Ground-
based Radar Placement for
AAM Surveillance**

Room: Majestic 6 | Leonardo Milone (Università degli Studi di Napoli Federico II), Flavia Causa (Università degli Studi di Napoli Federico II), Giancarmine Fasano (Università degli Studi di Napoli Federico II), Luca Manica (Collins Aerospace), Giacomo Gentile (Collins Aerospace), Micheal Dubois (Collins Aerospace)

2:00 PM - 2:30 PM

**Real-Time Ghost Detection in
Multi-Sensor Bearing-Only
Tracking**

Room: Majestic 6 | Ahmet Faruk Kucuk (Hacettepe University), Mustafa Rasit Ozdemir (Middle East Technical University), Seyda Ertekin (Middle East Technical University), Atila Yilmaz (Dept. of Electrical & Electronics Engineering, Hacettepe University), Luca Manica (Collins Aerospace)

2:30 PM - 3:00 PM

**From Position Reports to Raw
Measurements: A USSP-Centric
ADS-L Concept for U-space
Surveillance**

Best of Session

Best of Track

Room: Majestic 6 | Benjamin Lochow (Technische Universität Berlin), Fabian Frickenstein (TU Berlin), Leon Alexander Albrecht (Technical University Berlin), Maarten Uijt de Haag (Technische Universität Berlin), Luca Manica (Collins Aerospace)

Track: AVIONICS TECHNOLOGIES

Session: Verification, Coverage, and Simulation Frameworks

Session Chairs: Laura Humphrey (NASA), Leonidas Kosmidis (Barcelona Supercomputing Center (BSC) & Universitat Politècnica de Catalunya (UPC))

1:00 PM - 1:30 PM

**Non-intrusive Coverage
Measurement on Applications
Compiled to Web Assembly**

Room: Majestic 5 | Wanjia Zaeske (German Aerospace Center DLR e.V.), A. Cem Önem (German Aerospace Center (DLR), Institute of Flight Systems), Umut Durak (German Aerospace Center DLR e.V.)

1:30 PM - 2:00 PM

**Real-Time FPGA-Based OCR for
Vision-Based Flight Test
Instrumentation**

Room: Majestic 5 | Tulio Brito (Aeronautics Institute of Technology (ITA)), Denis Loubach (Aeronautics Institute of Technology), Marcus Vinicius Preisighe Viana (Instituto de Pesquisas e Ensaios em Voo (IPEV))

2:00 PM - 2:30 PM

**A Prototype Software Rasterization
Stack for Safety Critical Systems**

Best of Session

Room: Majestic 5 | Xavier Caricchio (Barcelona Supercomputing Center (BSC)), Josué Pedrajas (Barcelona Supercomputing Center (BSC)), Leonidas Kosmidis (Barcelona Supercomputing Center (BSC) & Universitat Politècnica de Catalunya (UPC))

2:30 PM - 3:00 PM

**Automated Validation of Flight
Dynamics in Engine Failure
Scenarios Using a FlightGear-Based
Avionics Framework**

Room: Majestic 5 | Brayan Daniel Sarmiento (Independent Researcher), Moreno Maria C. (Canadian Aviation Electronics (CAE))

Track: AI TOOLS FOR AEROSPACE

Session: AI Tools and Process I

Session Chairs: Darren Cofer (Collins Aerospace), Cong Liu (Collins Aerospace)

4:00 PM - 4:30 PM

Data-Driven Integrated Toolset for Airspace Demand Capacity Balancing Using Machine Learning and Optimization

Room: Majestic 2 | Sergi Mas-Pujol (CRIDA A.I.E.), Faustino Tello Caballo (CRIDA), Nicolas Suarez Tetzlaff (CRIDA)

4:30 PM - 5:00 PM

Assessing Machine Learning Readiness for Safety Critical Embedded Aviation: Insights from a Survey of Specialists following the W-Shaped Development

Room: Majestic 2 | Paula Cerdeira (Embraer), Carlos Ribeiro (Aeronautics Institute of Technology), Johnny Marques (Aeronautics Institute of Technology)

5:00 PM - 5:30 PM

From Explainability to Certifiability: XAI-Driven Assurance for AI-Based Avionics Systems

Best of Session

Room: Majestic 2 | Adem Hmissa (Polytechnique Montréal), Charles De Malefette (Polytechnique Montréal), Jean Yves OUATTARA (Ecole polytechnique montreal), Felipe Gohring de Magalhaes (Polytechnique Montreal), Ahmad Shahnejat Bushehri (Polytechnique Montréal), Rim Zrelli (Ecole Polytechnique de Montreal), Adel Abu sitta (Polytechnique Montréal), Gabriela Nicolescu (Ecole polytechnique montreal)

Track: AI APPLICATIONS FOR AEROSPACE

Session: AI-Enabled Cybersecurity and Intrusion Detection

Session Chairs: Baoluo Meng (GE Aerospace), Eric Roberts (GE Aerospace Research)

3:30 PM - 4:00 PM

Intrusion Detection for AI Applications via Timing Profiles

Best of Session

Room: Majestic 1 | Anika Christmann (IDA, TU Braunschweig), Mischa Möstl (TU Braunschweig), Rolf Ernst (TU Braunschweig),

4:00 PM - 4:30 PM

XACML Policy Verification for Attribute-Based Access Control Policies by Decision Tree Partitioning

Room: Majestic 1 | Athanasios Rizos (Airbus Defence and Space GmbH), Julian Wendlandt (Ludwig Maximilians Universität München), Corinna Schmitt (Research Institute CODE, Universität der Bundeswehr München), Alberto Arana Ragel (German Aerospace Center)

4:30 PM - 5:00 PM

Neuroevolution of Graph-Embedded Neural Networks for Network Intrusion Detection

Room: Majestic 1 | Jesse Slager (Embry-Riddle Aeronautical University), Ilhan Akbas (Embry-Riddle Aeronautical University)

Track: HUMAN FACTORS

Session: Perception, Sensing, and Operational Vision Systems

Session Chair: Chandra Sanders (FAA)

3:30 PM - 4:00 PM

Real-time aircraft docking guidance using multi-sensor fusion for enhanced pilot awareness in low-visibility conditions

Room: Diamond 1 | Beomchan Park (Incheon International Airport Corporation), Ihnsik Weon (Korea Institute of Industrial Technology)

4:00 PM - 4:30 PM

Battle Damage Assessment for Next Generation Fighter Aircraft Based on Synthetic Aperture Radar Image and Electro-Optical Targeting System Image

Best of Session

Room: Diamond 1 | Samed Hira (Turkish Aerospace Industries), Ali Seydi Keçeli (Hacettepe University)

4:30 PM - 5:00 PM

Validating AI Atmospheric Visibility Estimators Using Human Observers

Room: Diamond 1 | Chad Mourning (Ohio University), Gary Pokodner (Federal Aviation Administration), Ian Johnson (Federal Aviation Administration), Ethan Krimins (FlightProfiler)

Track: AIR TRAFFIC MANAGEMENT (ATM)

Session: Collaborative Flow Management and ATM Decision Support

Session Chair: Mara Weber (German Aerospace Center DLR e.V.)

3:30 PM - 4:00 PM

Operational Evaluation of NASA's Collaborative Digital Departure Reroute Capability with Flight Operators and FAA in Dallas and Houston Texas

Room: Majestic 3 | Eric Chevalley (NASA / SJSU), Gregory Juro (Cavan Solutions), William Coupe (NASA)

4:00 PM - 4:30 PM

Recovering Invisible Traffic Management Restrictions From Unstructured FAA Operational Logs: A Precision-First Dual-Layer Framework

Best of Session

Room: Majestic 3 | Jin Li (GRA, Incorporated), Michael Asante (Federal Aviation Administration), Renee Fields (Federal Aviation Administration), Tiffany King (Federal Aviation Administration)

4:30 PM - 5:00 PM

A Privacy-Preserving Target Time Management System for Air Traffic Flow Management

Room: Majestic 3 | Sebastian Gruber (Johannes Kepler Universität Linz), Tobias Harzfeld (Johannes Kepler University Linz), Christoph G. Schuetz (Johannes Kepler Universität Linz), Christoph Fabianek (Frequentis AG), Christoph Rihacek (Frequentis AG), Eduard Gringinger (Frequentis AG), Florian Wohner (AIT Austrian Institute of Technology), Thomas Loruenser (AIT Austrian Institute of Technology)

5:00 PM - 5:30 PM

Stochastic Strategic Demand-Capacity Balancing Using Model-Free Reinforcement Learning

Room: Majestic 3 | LUCAS ORBOLATO CARVALHO (Aeronautics Institute of Technology (ITA)), Mayara Condé Rocha Murça (Aeronautics Institute of Technology)

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: Integrated Sensing and Communications

Session Chairs: Flavia Causa (Università degli Studi di Napoli Federico II), Giancarmine Fasano (Università degli Studi di Napoli Federico II)

3:30 PM - 4:00 PM

Joint Communication and Sensing for Urban Air Mobility: Waveform Analysis and SDR-based Demonstrator

Room: Majestic 6 | Luis Partichelli Potrich (Collins Aerospace), Chiara Sabaini (Collins Aerospace), Michele Segata (Department of Information Engineering and Computer Science, ...), Muhammad Zeeshan (Collins Aerospace Ireland), Luca Manica (Collins Aerospace)

4:00 PM - 4:30 PM

The Impact of PHY Data Link Characteristics on Cooperative Navigation for UAVs

Best of Session

Room: Majestic 6 | Jan Patrick Gerhards (German Aerospace Center (DLR)), Lukas Marcel Schalk (German Aerospace Center)

4:30 PM - 5:00 PM

Adaptive 5G Resource Allocation for Multistatic ISAC-Based UAV Detection and Tracking

Room: Majestic 6 | Cole Dickerson (North Carolina State University), Wahab Khawaja (North Carolina State University at Raleigh), Ismail Guvenc (North Carolina State University)

5:00 PM - 5:30 PM

Avionics-Independent, Crash-Survivable LoRa-Based Positioning and Communication System for Unmanned Aerial Vehicles

Room: Majestic 6 | Mehmet Ali Akıncı Hüseyin Kerem Aktaş

Track: CYBER, SYSTEMS, AND SOFTWARE (-ENGINEERING)

Session: Network and Connectivity

Session Chairs: Andreas Schweiger (Airbus), Andrew Videmsek (Reliable Robotics)

3:30 PM - 4:00 PM

A Lifecycle Budgeting Framework for ARINC 661 Cockpit Display Performance

Room: Royal 3 | Aubanel Monnier (Synopsys), John Macauley (Synopsys)

4:00 PM - 4:30 PM

Demonstration of End-to-End Latencies and Fault-Tolerance for Deterministic Space Systems with a Time-Triggered ROS2-Executor and TTEthernet

Room: Royal 3 | David Hofer (TTTECH Computertechnik AG), Janos Bezsilia (TTTech Systems AG), Wilfried Steiner (TTTech Computertechnik AG), Stefan Wernitznigg (TTTECH Computertechnik AG), Ivan Masar (TTTECH Computertechnik AG)

4:30 PM - 5:00 PM

Gravity Model Testing in GNSS-aided Inertial Navigation Systems

Best of Session

Room: Royal 3 | Timothy Needham (Ohio University), Sarah Lawrence (Ohio University)

Track: AVIONICS PLATFORMS

Session: Network Integrity, EMC, and Quantifying Determinism

Session Chair: Denis Loubacj (Aeronautics Institute of Technology)

3:30 PM - 4:00 PM

Why Error Detection Coverage in Avionics Ethernets is Unknown (and Unknowable?)

Best of Session

Best of Track

Room: Majestic 4 | Kevin Driscoll (Amentum), Brendan Hall (Ardent Innovation Labs), Andrew Loveless (NASA Johnson Space Center)

4:30 PM - 5:00 PM

Neural Modeling of Conducted EMC Coupling in Aircraft Wiring

Room: Majestic 4 | Pierre AMBLARD (Thales), Tristan DUBOIS (LABORATOIRE IMS), Jean-Baptiste BEGUERET (IMS - UMR 5218), Adil EL ABBASI (Thales), Marc GATTI (Thales AVS France SAS)

5:00 PM - 5:30 PM

Quantifying Determinism

Room: Majestic 4 | Bjorn Andersson (Carnegie Mellon Software Engineering Institute), Dionisio de Niz (Carnegie Mellon University)

Track: AVIONICS TECHNOLOGIES

Session: Predictable Computing and Safety-Critical Accelerators

Session Chair: Cong Liu (Collins Aerospace)

3:30 PM - 4:00 PM

Online Partitioning Algorithm for an Incremental Lossless Data Compression

Best of Session

Room: Majestic 5 | Guillaume COTTIN (IMS), Franck CAZAURANG (Université de Bordeaux), Jérôme Saracco (IMS), Loic Lavigne (Bordeaux INP), Franck TAILLIEZ (Thales DMS (Defence and Mission Systems)), Vincent Corretja (THALES), Benoît SOUYRI (Thales DMS (Defence and Mission Systems))

4:00 PM - 4:30 PM

COOK Access Control on an embedded Volta GPU

Room: Majestic 5 | Benjamin Lesage (ONERA), Frédéric Boniol (ONERA), Cédric Cazanove (ONERA), Claire Pagetti (ONERA)

4:30 PM - 5:00 PM

Investigation of Cache Coloring for mitigating interference effects in dynamic virtualization in the context of safety-critical avionics

Room: Majestic 5 | Raphael Rohrmueller (Universität Stuttgart), Jonas Petereit (University of Stuttgart), Björn Annighöfer (Universität Stuttgart)

5:00 PM - 5:30 PM

Towards the Modernisation of a Safety Critical GPU Compiler

Room: Majestic 5 | Pau Adell (Barcelona Supercomputing Center (BSC)), Matina Maria Trompouki (Barcelona Supercomputing Center (BSC)), Leonidas Kosmidis (Barcelona Supercomputing Center (BSC)&Universitat Politècnica de Catalunya (UPC))

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: Safety and Assurance (II)

Session Chair: C Michael Holloway (NASA Langley Research Center), Lauren White (NASA Langley Research Center)

3:30 PM - 4:00 PM

Complexity-Aware System Validation for Autonomous Unmanned Aerial Systems

Room: Diamond 2 | Aashi Arun (Zipline), Peter Sachs (Zipline)

4:00 PM - 4:30 PM

Protection Levels for Vision-Based Pose Estimation

Room: Diamond 2 | Olivia Beyer Bruvik (Stanford University), Romeo Valentin (Stanford University), Marc Schlichting (Stanford University), Don Walker (Airbus Acubed), Mykel Kochenderfer (Stanford University)

4:30 PM - 5:00 PM

Wepwawet: An ML-DSA Signing Service for Distributed Avionics Nodes

Best of Session

Room: Diamond 2 | Mohamed El-Hadedy (California State Polytechnic University Pomona), Wen-mei Hwu (UIUC)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: Trajectory Planning and Online Optimization

Session Chair: Catharina Lindholm (Saab Group), Benjamin Lochow (Technische Universität Berlin)

3:30 PM - 4:00 PM

RAPID: A Path Planning Framework for Autonomous Aircraft in Dynamic Risk Environments

Room: Silver | Julian Gutierrez (NASA Langley Research Center), Esther Conrad (NASA Langley Research Center), Lauren White (NASA Langley Research Center), John Siratt (NASA Langley Research Center), César Muñoz (NASA Langley Research Center)

4:00 PM - 4:30 PM

Very-Low-Altitude Trajectory Planning on Digital Surface Models Using A* Search and Nonlinear Model Predictive Control

Room: Silver | Uli Utz (University of the Bundeswehr Munich), Maximilian Böck (University of the Bundeswehr Munich), Matthias Gerds (Universität der Bundeswehr München)

4:30 PM - 5:00 PM

Scalable Online Flight Trajectory Optimization via Sequential Quadratic Programming for Urban Air Mobility in Ultra Low-Altitude Airspace

Best of Session

Room: Silver | Josue N Rivera (Nanyang Technological University), Bohang Liang (Nanyang Technological University), Chen Lv (Nanyang Technological University), James Wang (Nanyang Technological University)

Track: AI APPLICATIONS FOR AEROSPACE

Session: AI for Airspace and Airport Operations

Session Chairs: Sharad Dixit (GE Aerospace Research), Wes Ryan (Northrop Grumman)

10:30 AM - 11:00 AM

Vision-Based Adversarial Attacks Against Terminal Guidance of Uncrewed Aircraft Systems

Best of Session

Room: Majestic 1 | Anagha Umesh (College of Engineering Trivandrum), Devaprakash Muniraj

11:00 AM - 11:30 AM

A Transformer-Based Framework for Visual Aerial Navigation

Room: Majestic 1 | Mohammed Behnia (North Carolina Agricultural and Technical State University), Parham Kebria (NC A&T State University)

11:30 AM - 12:00 PM

Aviation-Specific Sentence Embeddings: Models and Benchmark Datasets

Room: Majestic 1 | Nibal Niraula (Boeing Company), Hai Nguyen (The Boeing Company), Cedar Frost (The Boeing Company), Daniel Whyatt (Boeing Company), Noushin Sahin (The Boeing Company), Logan Branscum (The FAA), Karna Bryan (The FAA), Jim Cashdollar (The FAA), Brian McCormick (The FAA), Gayathri Barathamani (The FAA)

Track: AI APPLICATIONS FOR AEROSPACE

Session: AI Tools and Process II

Session Chairs: C Michael Holloway (NASA Langley Research Center), Lauren White (NASA Langley Research Center)

10:30 AM - 11:00 AM

Bridging Natural Language to Verified Implementation: A Neuro-Symbolic High-Assurance MBSE Pipeline in SysML v2

Room: Majestic 2 | Amer Tahat (Collins Aerospace), David Hardin (Collins Aerospace), Isaac Amundson (Collins Aerospace), Junaid Babar (Collins Aerospace), Timothy A Barclay (Collins Aerospace), Karl Hoech (Collins Aerospace), Janet Liu (Collins Aerospace), Darren Cofer (Collins Aerospace)

11:00 AM - 11:30 AM

Testbot - An AI & Rules Based Copilot for Complete and Robust Requirements Based Testing

Room: Majestic 2 | Jack Reynolds (Collins Aerospace), Jeffrey Burnett (Collins Aerospace), Nitesh Mudapaka (Collins Aerospace), Joel Lam (Collins Aerospace)

11:30 AM - 12:00 PM

A Latent-Space ODD-Proxy Framework for Testing Machine-Learned Avionics Classifiers

Best of Session

Room: Majestic 2 | Bastian Luettig (Universität Stuttgart), Yousif M. Elsheikh (University of Stuttgart), yassine Akhlat (University of Stuttgart), Björn Annighöfer (Universität Stuttgart)

Track: HUMAN FACTORS

Session: Pilot Cognition, Workload, and Training

Session Chair: Divya Chandra

10:30 AM - 11:00 AM

Evaluation of Simulator Sickness and Postural Stability in Mixed Reality Flight Simulation

Best of Session

Room: Diamond 1 | Lukáš Micka (University of Defence - Air Force Department), Jan Boril (University of Defence), Ondrej Zavila (University of Defence - Air Force Department), Ondrej Mach (University of Defence), Ladislav Gögh (University of Defence)

11:00 AM - 11:30 AM

MODALSIM94: A Multimodal Physiological and Performance Dataset from Simulated Flight Workload Tasks

Room: Diamond 1 | Marcel Ramon Rodriguez (Fraunhofer Institute for Cognitive Systems), Shanza Ali Zafar (Fraunhofer IKS), Michael Zintl (Technische Universität München), Dominik Janetzko (Technische Universität München), Florian Holzapfel (Technische Universität München)

11:30 AM - 12:00 PM

A Targeted Review of Cognitive Models with Implications for Pilot Decision-Making Training

Room: Diamond 1 | Jiwon Kim (Iowa State University), Michael Dorneich (Iowa State University), Eliot Winer (Iowa State University), Lori Brown (Western Michigan University), Geoffrey Whitehurst (Western Michigan University)

Track: COMMUNICATIONS, NAVIGATION AND SURVEILLANCE AND INFORMATION NETWORKS

Session: RF Interference Mitigation and Datalinks

Session Chairs: Robert McCullen (Cirrus Aircraft), Vijay Venkataraman (Cirrus Aircraft)

10:30 AM - 11:00 AM

An Open-Source CPDLC Testing Environment for Real-Time Tower-Pilot Ground Operations

Best of Session

Room: Majestic 6 | Missipsa Annane (Polytechnique Montréal), Srishti Rawal (Polytechnique Montreal), Philippe Doyon-Poulin (Polytechnique Montreal)

Track: UNMANNED AIRCRAFT SYSTEMS & UNCREWED SPACECRAFT (UAS/USS)

Session: Sensing & Detection

Session Chair | Bjorn Andersson (Carnegie Mellon Software Engineering Institute), Christin Rauche (GE Aerospace)

10:30 AM - 11:00 AM

Detection and Tracking of Small Uncrewed Systems in Varying Environments

Room: Diamond 2 | Chester Dolph (NASA Langley Research Center), Daniel Hill (Analytical Mechanics Associates), Cuong Quach (NASA Langley Research Center), Tanner Slagel (NASA), Scott Hedrick (NASA), George Szatkowski (NASA), Dasarath Katragadda (Analytical Mechanics Associates), James Cruz (NASA), James Nicholson (NASA), Andrew Guion (NASA), Kaveh Darafsheh (NASA), Federica Vitiello (Università degli Studi di Napoli Federico II), Flavia Causa (Università degli Studi di Napoli Federico II), Roberto Opromolla (Università degli Studi di Napoli Federico II), Giancarmine Fasano (Università degli Studi di Napoli Federico II)

11:00 AM - 11:30 AM

Ownship UAS-Assisted Calibration and Georegistration of Ground Radar-Camera Sensors for Counter-UAS Systems

Best of Session

Best of Track

Room: Diamond 2 | Sina Sajjadi (National Research Council of Canada (NRC)), Sina Soleymannpour (National Research Council Canada), Jacopo Panerati (National Research Council Canada), Varun Mehta (National Research Council Canada), Dr. Iraj Mantegh (National Research Council Canada), Frédéric Bourgault (National Research Council Canada)

11:30 AM - 12:00 PM

Uncertainty-Aware Sensor Cueing and Correlation-Robust Fusion for Multi-Target Drone Detection

Room: Diamond 2 | Varun Mehta (National Research Council Canada), Sina Sajjadi (National Research Council Canada), Iraj Mantegh (National Research Council Canada), Miodrag Bolic (University of Ottawa)

Track: URBAN, ADVANCED AIR MOBILITY & NEW SPACE

Session: UAM Traffic Management and Sequencing

Session Chair | Billy Josefsson (Linköping University LiU), Catharina Lindholm (Saab Group)

10:30 AM - 11:00 AM

Development of a Novel Concept for Automated Arrival Sequencing at Vertiports

Best of Session

Room: Silver | Luca Hohenberger (Technical University of Darmstadt), Lukas Biesalski (Technical University of Darmstadt, Institute of Flight Systems and Automatic Control)

11:00 AM - 11:30 AM

A Unified ATFM Phase-based Objective Framework for Decentralized Urban Air Mobility Traffic Management

Room: Silver | Rajagopal Sugumar (Embry-Riddle Aeronautical University), Ilhan Akbas (Embry-Riddle Aeronautical University)