

Sensor Systems and Information Fusion

Papers Presented at the AIAA SCITECH 2026 Forum

Orlando, Florida, USA
12-16 January 2026

ISBN: 979-8-3313-3514-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

The contents of this work are copyrighted and additional reproduction in whole or in part are expressly prohibited without the prior written permission of the Publisher or copyright holder. The resale of the entire proceeding as received from CURRAN is permitted.

For reprint permission, please contact AIAA's Business Manager, Technical Papers. Contact by phone at 703-264-7500; fax at 703-264-7551 or by mail at 12700 Sunrise Valley Drive, Suite 200, Reston, VA 20191, USA.

TABLE OF CONTENTS

Center of Gravity Estimation for Rotary-Wing Aircraft Using Neural Networks	1
<i>Andrew Davis</i>	
Vision Based Navigation System for an Aircraft in Approach Phase	10
<i>Balaji C. Kartikeyan, James E. Steck</i>	
Hierarchical Sensor Fusion Using Dempster-Shafer Theory for Anomaly Detection in Aviation.....	28
<i>Joshua Prinzel, Ezequiel J. Garcia, Nicholas J. Napoli</i>	
Reinforcement Learning Guided Partial-Update Extended Kalman Filter	54
<i>Matthew Longmire, Humberto Ramos, Kevin Brink</i>	
DeBERTa-AT: A DeBERTaV3 Variant Fine-Tuned on Air Traffic Data	67
<i>Richard Yue, David Nielsen, Krishna Kalyanam</i>	
Sensor Contribution Analysis for Multimodal Estimation in Soft Robotic Actuators	74
<i>Joshua Pastizzo, Griffin Macrae, Mira Oflus, Kristina Andreyeva, David Barnhart</i>	
Sensor Data Fusion for Adversarial Patch Attack Mitigation	83
<i>Justin A. Kauffman, Daniel Sobien, Alex Kyer, Justin Kauffman</i>	
Examining Machine-Learning Methods to Develop a Correction Equation for Drone-Mounted PM _{2.5} Concentrations	98
<i>Nia Walton, Anaiya Reliford, Caleb Cooper, Sonya T. Smith</i>	
Autonomous Aerial Search Using a Particle Filter and Satellite Imagery	107
<i>Matthew Wanta, J. J. Steckenrider, James Bluman, Joseph Dorta</i>	
Cooperative Orbit Determination for Trusted, Autonomous, and Decentralised Satellite Operations	118
<i>Beth Probert, Ruaridh A. Clark, Erik Blasch, Malcolm Macdonald</i>	
Sensitivity of Adversarial Multi-Agent Reinforcement Learning to Operational Sensing Challenges.....	133
<i>Justin Krometis, Noah Provenzano, Sahaj Singh, Rohan Vuthuri, Justin Kauffman, Alex Kyer, Daniel Sobien</i>	
Multi-Satellite Based Passive Localization of Spaceborne Cooperative RF Emitters: Simulation Framework and Impact of Constellation Geometry	146
<i>Matteo Palescandolo, Roberto Opromolla, Giancarmine Fasano, Domenico Pascale, Pierluigi Martufi, Carlo Ciancarelli</i>	
Improving Aircraft Protection During Airport Ground Operations with Low SWaP Radar Sensing	168
<i>Federica Vitiello, Paolo Veneruso, Enrico Miccio, Flavia Causa, Roberto Opromolla, Giancarmine Fasano</i>	
A Behavior Tree-Based Visual Reasoning Architecture for Enhanced UAM Object Recognition.....	183
<i>Jinyoung Lee, Sungwook Cho, Yeonduek Jung</i>	
Practical Motion Estimation for Micro Aerial Vehicles Using Wide-Field-Integration of Optic Flow	196
<i>Ryuichiro Okabayashi, Riko Shirahase, Mai Bando, Shinji Hokamoto</i>	
Ground Plane-Aided Extrinsic Calibration of Inertial and RGB-D Sensors for Uncrewed Aerial Vehicles	203
<i>Ilyar A. S. Hokmabadi, Mahdis Bisheban</i>	

Toward a Hybrid Intrinsic Calibration Framework of Multiple IMUs and Joint Encoders for Robotic Manipulators on Moving Platforms	220
<i>Ilyar A. S. Hokmabadi, Mahdis Bisheban</i>	
Enabling Autonomous Navigation with Radar-Only Perception in GPS-Denied Environments.....	234
<i>Sandip S. S. Kumar, Harshang Chhaya, Humberto Ramos, Matthew Longmire, Jared Paquet, Kevin Brink</i>	
Error Analysis of Extensive Drone Flight Data for Satellite Navigation in Urban Environment	245
<i>V. Donato, G. Giangreco, F. Mattei, C. Conte, G. Rufino, D. Accardo, A. Prota</i>	
Single-Axis Gyroscope Scale Factor Estimation for a First-Order Gauss–Markov Drift Model	258
<i>Aneesh V. Khilnani, Shida Ye, Yaakov Bar-Shalom, Ahmed Zaki, Peter Willett</i>	
Development of Dandelion-Inspired Drones: Dandidrones	274
<i>Bappa Mitra, Aditya Potnis, Soumarup Bhattacharyya, Zhehong Zhang, Marc Desmulliez, Ignazio M. Viola</i>	
CFD-based Characterization of a WxUAS Sensor Housing for In-situ Atmospheric Sampling	283
<i>Eduardo Michel, Gustavo B. H. De Azevedo, Chitrarth Prasad, Aaron Alexander, Jamey D. Jacob</i>	
Lightweight UAV-Borne 3D Perception via Pan-Tilt 2D LiDAR	298
<i>Larry Garcia, Ty Runner, Hector Oropeza, Cesar Salinas, Junfei Xie, Jun Chen</i>	
Neural Representation for Surface Reconstruction from Ultra-Sparse Depth Measurements.....	308
<i>Harshang Chhaya, Humberto Ramos, Sandip S. S. Kumar, Matthew Longmire, Jared Paquet, Kevin Brink</i>	
Development of Autonomous Strategies for High Resolution Data Acquisition For sUAS-Based Atmospheric Research.....	317
<i>Kojo Osei-Ntansah, Anaiya Reliford, Sonya T. Smith</i>	
Detecting Orbital Debris in LEO and MEO Using GNSS Signals for Passive Space Surveillance and Collision Risk Assessment.....	329
<i>Andres E. Sanchez-Calvo, Alina S. S. Vinokurova</i>	
Boomless Search Coil Sensing with Magnetorquers in CubeSats: Addressing Magnetic Remanence and Interference	339
<i>Surya Kalluri, Alex Hoffmann, Mark Moldwin, James Cutler, Lauro Ojeda</i>	
Sensor Fusion Techniques for Uncertainty Reduction in Rendezvous and Proximity Operations	355
<i>Cristobal Garrido, David Barnhart</i>	
Dynamic Data Driven Applications Systems (DDDAS) for Space Sensor Fusion	369
<i>Erik Blasch</i>	
Efficient, Covariance-Constrained Sensor Fusion Through Observation Decimation	381
<i>Andres E. Fernandez, Erik Blasch, Angel Flores-Abad, John J. Bird</i>	
Comparison of Methods for Wavelength Determination from Laser Speckle Patterns	392
<i>Joseph Tompkins, Aaron J. Bonner, Stephen C. Cain</i>	
Tracking the Spread of Rapid Ohia Death Using Synthetic Aperture Radar	401
<i>Christopher M. O'Neill, Sean T. Peters</i>	

Applying the Complex-Step-Based Numerical Integration Within an Extended Kalman Filter 412
 J. Humberto Ramos, Kevin Brink

Author Index