

2024 Sensor Data Fusion: Trends, Solutions, Applications (SDF 2024)

**Bonn, Germany
25-27 November 2024**



**IEEE Catalog Number: CFP2479T-POD
ISBN: 979-8-3315-2745-7**

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2479T-POD
ISBN (Print-On-Demand):	979-8-3315-2745-7
ISBN (Online):	979-8-3315-2744-0
ISSN:	2333-7427

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Advanced Sensor Fusion for Railway Security - A Hierarchical Graph-Based Approach	1
<i>Michael Hubner, Jan Nausner, Kilian Wohlleben</i>	
Sequential Drone Routing for Data Assimilation on a 2D Airborne Contaminant Dispersion Problem	8
<i>Daniele Giovanni Gioia, Jacopo Bonari, Daniel Lichte, Alexander Popp</i>	
Multi-Sensor Simulation from Target Tracking to a Recognized Air Picture	16
<i>Grabner Florian</i>	
Performance Evaluation of Deep Learning-Based State Estimation: A Comparative Study of KalmanNet.....	24
<i>Arian Mehrfard, Bharanidhar Duraisamy, Stefan Haag, Florian Geiss</i>	
Multi-Sensor Extension of Radar Resource Management Approach Q-RAM	31
<i>Christoph Vollweiter, Folker Hoffmann</i>	
Exploring Data Fusion for AI-Based People Counting in a Static Public Transport Vehicle Using Multiple IR-UWB Transceivers.....	39
<i>Francesco Blangiardi, Raul Beltrán B., Zhicheng Zhao, Streiter Reinhard, Marko Rößler, Jan Langer, Ulrich Heinkel, Harald Kuhn</i>	
Comparing Illuminator Selection Algorithms for Mobile Communication Based Passive Radar.....	47
<i>Sebastian Thomas Handke, Christian Steffes, Wolfgang Koch</i>	
Voronoi Trust Regions for Local Calibration Testing in Supervised Machine Learning Models	55
<i>Markus Walker, Philipp S. Bien, Uwe D. Hanebeck</i>	
IMM-Based PMBM Filter for Maneuvering Extended Target Tracking	63
<i>Jiayi Gu, Jiaqi Shi, Kun Shi, Chaoqun Yang, Xianghui Cao</i>	
Optimized Array Geometry for 2D-DOA Estimation Using a Time-Multiplexed Co-Array Approach	70
<i>Clemens Allmann, Jannik Springer, Marc Oispuu, Wolfgang Koch</i>	
Improving Online Handwriting Trajectory Reconstruction Based on Temporal Convolutional Networks	77
<i>Alexey Serdyuk, Fabian Krefß, Iuliia Topko, Tanja Harbaum, Jürgen Becker, Tim Hamann, Peter Kämpf</i>	
Computational Complexity Reduction for the Track-To-Track Association Problem	85
<i>Luigi Podda, Fotios Katsilieris, Stefan Neumeier</i>	
Multi-Sensor Track-To-Track Fusion Using Dynamic Consensus	93
<i>Shuqi Zhang, Ting Yuan, Wenqi Caol, Kuo-Chu Chang, Lifeng Zhang, Krishanth Krishnan</i>	
Towards a Hybrid Digital Twin: Fusing Sensor Information and Physics in Surrogate Modeling of a Reinforced Concrete Beam.....	100
<i>Tarik Sahin, Daniel Wolff, Max Von Danwitz, Alexander Popp</i>	
Modeling Contour Measurements of Elliptical Extended Objects Via Gaussian Spatial Distributions.....	108
<i>Simon Steuernagel, Kolja Thormann, Marcus Baum</i>	

A Hybrid AI Framework Integrating Ontology Learning, Knowledge Graphs, and Large Language Models for Improved Data Model Translation in Smart Manufacturing and Transportation	116
<i>Kabeh Mohsenzadegan, Vahid Tavakkoli, Witesyavwirwa Vianney Kambale, Kyandoghere Kyamakya</i>	
Uncertainty Quantification for Adaptive Measurement Noise in Kalman Filter Based Object Tracking.....	122
<i>Fabian Ulreich, André Kaup, Martin Ebert</i>	
On Localization Accuracy in Urban Environments Using TDOA Measurements.....	129
<i>Philipp Mikus, Matthias Ospel, Marc Oispuu, Wolfgang Koch</i>	

Author Index