

SDF-MFI 2023 REPORT

IMPRESSIONS OF THE IEEE SYMPOSIUM SENSOR DATA FUSION AND INTERNATIONAL CONFERENCE ON MULTISENSOR FUSION AND INTEGRATION (SDF-MFI 2023)

In November 2023, the highly anticipated conferences MFI and SDF Symposium took place together in Bonn, Germany, marking a significant event in the field of conferences with a focus on applications in target tracking, state estimation, and data fusion for automation and robotic systems. The event saw a robust participation of 99 attendees hailing from 16 different countries, including the United States and various nations across Asia, underscoring its international significance. Spanning three days, the conference was structured to facilitate not only the dissemination of cutting-edge research but also to foster networking and collaborative opportunities among participants.

DAY 1: TUTORIALS AND ICEBREAKER EVENT

The conference commenced with an engaging series of five tutorials grouped in morning and afternoon sessions, which aimed at providing attendees with in-depth knowledge on various aspects of sensor data fusion. These sessions were designed to cater to both newcomers and seasoned experts in the field, ensuring a comprehensive understanding of the subject matter.

The highlight of the evening was the icebreaker event held at a former brewery, where attendees enjoyed a joint dinner. This casual and welcoming setting provided an excellent opportunity

for participants to network, discuss their work informally, and build connections that would last beyond the conference.

DAYS 2 AND 3: TECHNICAL PRESENTATIONS AND KEYNOTES

Over the course of the conference, 37 technical presentations were delivered across 12 sessions in two parallel tracks. The SDF Symposium format, with 30-minute time slots for each presentation, was highly effective in allowing speakers to delve deeply into their topics. This format also facilitated detailed discussions, enabling a thorough exploration of the ideas presented. The sessions focused on advances in methodology for estimation theory, intelligent systems, and navigation, but also provided insights into applications of camera processing for tracking and automotive driver assistance.

The heart of the conference was undoubtedly the keynote presentations delivered on the second and third days. Henk Blom, the founder of the Interacting Multiple Model scheme, captivated the audience with his insights on the application of AI in air transportation, highlighting the potential of artificial

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Uwe Hanebeck opening the SDF Symposium and providing information on important parts of a conference.



Henk Blom starting his keynote on AI in air transportation.

intelligence to influence this critical sector. Following suit, Jörg Stückler presented on the following day, delving into visual SLAM methods and their implications for navigation and mapping technologies. These keynotes were not only informative but also inspirational.

The Gala Dinner served as a formal celebration of the conference's successes and achievements. During this event, the Best Paper awards (students and non-students) were announced, recognizing the exceptional contributions of researchers to the field of sensor data fusion. The evening was further enhanced by a stunning piano recital from Julia Rinderle¹, featuring pieces from



Martin Ulmke, Head of Distributed Sensor Systems at Fraunhofer FKIE, celebrates Markus Walker, recipient of the Best Paper award.



Pianist Julia Rinderle giving a wonderful recital and framing the gala dinner.

¹ <https://juliarinderle.de/>

ORGANIZATION AND AWARDS

Executive Chairs:

- ▶ Wolfgang Koch, Fraunhofer FKIE and University of Bonn
- ▶ Uwe D. Hanebeck, Karlsruhe Institute of Technology

Technical Chairs:

- ▶ Florian Pfaff, University of Stuttgart
- ▶ Felix Govaers, Fraunhofer FKIE

Program Chair:

- ▶ Manon Kok, Delft University of Technology

Tutorial Chair:

- ▶ Isabel Schlangen, Fraunhofer FKIE

Best Paper Award:

- ▶ Markus Walker, Marcel Reith-Braun, Peter Schichtel, Mirko Knaak, Uwe Hanebeck: *Identifying Trust Regions of Bayesian Neural Networks*

Best Paper Award Runner-up:

- ▶ Conor Rosato, Alessandro Varsi, Joshua Murphy, Simon Maskell: *An $O(\log_2 N)$ SMC2 Algorithm on Distributed Memory with an Approx. Optimal L-Kernel*

Best Paper Award 2nd Runner-up:

- ▶ Kolja Thormann, Marcus Baum: *Single-Frame Radar Odometry Incorporating Bearing Uncertainty*

Best Student Paper Award:

- ▶ Jannik Springer, Marc Oispuu, Wolfgang Koch, Peter Knott: *Joint Emitter Localization and Calibration for Moving Array Sensors*

Best Student Paper Award Runner-up:

- ▶ Daniel Frisch, Uwe Hanebeck: *Deterministic Von Mises-Fisher Sampling on the Sphere Using Fibonacci Lattices*

Best Student Paper Award 2nd Runner-up:

- ▶ Alexander Scheible, Thomas Griebel, Martin Herrmann, Charlotte Hermann, Michael Buchholz: *Track Classification for Random Finite Set Based Multi-Sensor Multi-Object Tracking*

Chopin, Brahms, and Beethoven—a fitting tribute to the city of Bonn's most famous son.

The combined SDF-MFI 2023 conference was unequivocally a great success, marked by high-quality presentations, impactful keynotes, and fruitful networking opportunities. The careful organization of the event ensured that attendees had a rich and rewarding experience. As participants returned to their home countries, they carried with them not only new knowledge and insights but also valuable connections and memories from the conference.

All publications of SDF-MFI 2023 may be found in IEEE *Xplore*.² SDF 2024 will be held again in Bonn, Germany, November 25-27, separate from MFI 2024, which will take place September 2-4 in Pilsen, Czechia.

² <https://ieeexplore.ieee.org/xpl/conhome/10361261/proceedingOrganizationandAwards>