

56th International Symposium on Robotics - ISR Europe 2023 | September 26–27, 2023

Welcome address by the Chairs of the ISR Europe 2023

Robotics technologies are in an active process of convergence towards innovative solutions with great benefit for all mankind. We roboticists are at the forefront of this development, combining Industry 4.0 and AI trends with established use cases from the industry. Robots are increasingly taking over dangerous, dull or painful tasks. Recent years have shown many interesting developments that can be published at the ISR, making it the ideal platform for presenting your research results to the community.

The 56th International Symposium on Robotics – ISR Europe 2023 – will be held in Stuttgart, Germany on September 26-27 2023. This international conference is jointly organized by the Institute for Control Engineering of Machine Tools and Manufacturing Units (ISW) at the University of Stuttgart, Fraunhofer IPA, and the Information Technology Society (ITG) within the Association for Electrical, Electronic & Information Technologies (VDE), supported by VDMA Robotics + Automation.

The ISR Europe 2023 will be complemented by an exhibition area including exhibits by the Scientific Society for Assembly, Handling and Industrial Robotics (MHI). The program is completed by the evening event at the traditional Cannstatt Folk Festival.

In two conference tracks over two days, the ISR Europe 2023 will offer an insight into state-of-the-art robot technologies to participants from both industry and research. A special session will be held for ROS-Industrial. In the ROS-Industrial Community Meeting, new technical and scientific developments made by the ROS-Industrial community will be presented and discussed. The meeting will focus on open-source robot software and applications including navigation, manipulation, motion planning, software engineering and hardware interfaces.

We would be honored to personally greet researchers and experts from the field of robotics in Stuttgart on September 26-27, 2023. Please submit your full paper for ISR Europe 2023 and we will do our best to provide an attractive program for the upcoming conference.

We are looking forward to receiving your submissions.

Deadline for full paper submission: March 13, 2023



**Univ.-Prof. Dr.-Ing.
Dr. h.c. mult. Alexander Verl**

Chair of ISR Europe 2023
on behalf of International
Federation of Robotics (IFR)



**Dr.-Ing.
Werner Kraus**

Chair of ISR Europe 2023
on behalf of International
Federation of Robotics (IFR)

The Place to be for Robotics

The 56th International Symposium on Robotics (ISR Europe 2023) by IFR (International Federation of Robotics) will take place at Hotel Maritim and the ISW in Stuttgart, Germany from 26-27 September, 2023. The conference is organized in conjunction with the anniversary event 50 years of Robotics at Fraunhofer IPA.

About Stuttgart

Stuttgart is one of Europe's leading manufacturing regions, being the home of numerous industrial companies, machine tool manufacturers and production engineering businesses. As a part of the Cyber Valley, Europe's largest AI research consortium, the region is at the forefront of innovations. A large number of state-of-the-art research projects by University of Stuttgart, including ISW and Fraunhofer IPA, can be viewed at the research campus for future car manufacturing ARENA2036.

Fraunhofer IPA



The Fraunhofer Institute for Manufacturing Engineering and Automation IPA focuses on research of organizational and technological issues related to the manufacturing industry including service robotics and ROS Industrial.

Coinciding with the ISR, Fraunhofer IPA is celebrating its 50 year anniversary in robotics. On this occasion, attendees of the ISR will have the option to get a tour of the IPA lab space. Additionally, Fraunhofer IPA will host its Application Day on Thursday and Open Lab Day on Friday following the ISR.

ISR Europe 2023 is organized by

- The Information Technology Society in the VDE (ITG)
- ISW - University of Stuttgart
- IFR International Federation of Robotics
- Fraunhofer IPA

ISR Europe 2023 is supported by

- VDMA Robotics + Automation

Contact

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Conference Venue

Maritim Hotel Stuttgart
Alte Reithalle
Seidenstraße 34
70174 Stuttgart

www.isr-robotics.org

Organized by





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Program Committee

Chairs

- Werner Kraus, Fraunhofer IPA, GER
- Alexander Verl, University of Stuttgart, GER

Co-Chairs

- (Invited) ■ Jeff Burnstein, A3, USA
- Volker Spanier, VDMA Robotics, GER
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- Franz Dietrich, Technical University Berlin, GER
- Klaus Dröder, TU Braunschweig, GER
- Norbert Elkmann, Fraunhofer IFF, GER
- (Invited) ■ Paul T. Evans, Southwest Research Institute, USA
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- Horst-Michael Groß, Technical University Ilmenau, GER
- Björn Hein, Hochschule Karlsruhe, GER
- Christoph Hinze, ISW University of Stuttgart, GER
- Marco Huber, Fraunhofer IPA, GER
- Steffen Ihlenfeldt, TU Dresden, GER
- (Invited) ■ Dirk Jacob, HS Kempten, GER
- René Kirsten, ABB Forschungszentrum, GER
- Bernd Kühlenkötter, Ruhr-Universität Bochum, GER
- Ren C. Luo, National Taiwan University, TWN
- (Invited) ■ Alexander Meißner, Dürr Systems, GER
- Oliver Niggemann, HSU Hamburg, GER
- Mircea Nitulescu, Robotics Society of Romania, RO
- Jong-oh Park, Chonnam National University, KR
- (Invited) ■ Erwin Prassler, Hochschule Bonn-Rhein-Sieg, GER
- (Invited) ■ David Reger, Neura Robotics, GER
- Jürgen Roßmann, RWTH Aachen, GER
- (Invited) ■ Martin Ruskowski, DFKI Kaiserslautern, GER
- Mehdi Salihi, EPSON Deutschland, GER
- Thorsten Schüppstuhl, Technical University Hamburg-Harburg, GER
- Jan Seyler, FESTO, GER
- Ulrike Thomas, Technical University Chemnitz, GER
- Anna Valente, University of Applied Sciences and Arts of Southern Switzerland, CH
- Robert Weidner, Universität Innsbruck, AU
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- Nicolas Parisel, VDE, GER
- Judith Sanders, VDE, GER

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- Stefan Sagert, VDMA Robotics, GER
- Patrick Schwarzkopf, VDMA Robotics + Automation, GER

Full Paper Submission

all papers are published on IEEE

The official language of the ISR Europe 2023 is English. Prospective authors can submit a full paper in pdf-format (6 to 8 Pages DIN A4). For full paper submission and more information please visit our website: www.isr-robotics.org

Important dates

- Deadline for full papers: April 13th, 2023
- Notification of acceptance: May 17th, 2023
- Deadline for revised papers: June 30th, 2023

Papers have to be submitted using EDAS under the following link:
<https://edas.info/newPaper.php?c=30453>

Submission of accompanying videos

(optional):

Accompanying videos can be submitted with the full paper.

Submitted videos should adhere to the following guidelines:

- File size: up to 20MB
- Format: mpeg, mp4, mpg
- Maximum duration: 180 sec.
- Minimum height: 480
- Minimum frame rate (fps): 20
- Scan type: Progressive

Please note that a video that was NOT submitted with the initial submission, will NOT be accepted at a later date.

Call for Exhibition

The exhibition area included in the conference venue offers a great possibility for companies and research institutions to present their developments and innovations to a professional audience. If you are interested in exhibiting at ISR, please contact us via the given contact address.

Symposium Topics

Contributions related, but not limited, to the following topics of interest are welcome:

1. Modeling, Planning and Control

- Mechanisms and kinematics
- Calibration and identification
- Theoretical foundations

2. Components and Technologies

- Actuators and controllers
- Robot end-effectors and robot infrastructure
- Vision, tactile and auditory sensors
- Visual servoing and tracking
- Virtual commissioning

3. Robotics in Production / Industrial Robots

- Assembly, handling, painting, machining, processing and logistics
- Robot programming and languages
- Intelligent manufacturing systems
- Matrix production
- Digital Twin
- Open-source software
- Industrial communication

4. Robotics in Service / Mobile Robotics

- Autonomous mobile robots and fleet management
- Service robots for domestic tasks
- Service robotics for professional services
- Rescue, surveillance, security, defence robotics
- Assistance, rehabilitation, medical robotics
- Educational and entertainment robotics
- Exploration, space, aerial or underwater robotics

5. Robotics in New Markets / Applications

- Construction industry, food, pharma and biology robotics
- Micro and nano-robotics
- Cognitive robotics, learning and adaptive systems, interconnected and ubiquitous robotics
- Biologically inspired robotics: humanoid, biomimetic or legged robots
- Platform economy
- Robotics startup culture

6. Human-robot-collaboration / Future of work

- Standards, safety, profitability and ergonomics
- Socioeconomics and industrial engineering
- Safe human-robot-collaboration

7. AI in Robotics – Robotic Applications that use AI

- Autonomous robots, machine vision, mobile robotics
- Probabilistic reasoning, estimation, decision
- Use cases