3rd International VDI Conference

Automotive Sensor Systems

Sensor Technologies on the Way to Autonomous Driving

February 11-12, 2020, Munich, Germany

• Innovations, Challenges and Trends in ADAS Sensing
• Impact of AI on Vehicle Perception Technology
• Testing, Simulation & Validation of Sensor Functions and ADAS Systems
• Mapping Technologies for Vehicle Perception
• Regulatory Framework & Standardization
• Functional Safety Challenges

+ Interactive World Café Session
+ International VDI Workshop

Meet international Experts from:

An event organized by VDI Wissensforum GmbH
www.vdi-international.com/ 01K0921020
09:00  Registration, Networking & Welcome Coffee

10:00  Chair’s Welcome and Opening Address
Dipl.-Ing. Holger Meinel, Independent Automotive Radar Expert, Germany

I. Setting the Scene: Innovations, Challenges and Trends in ADAS Sensing

10:15  From Driving Aid to Autonomy: Will Sensors rise to the Challenges?
• Key external sensing requirements for SAE levels 1 to 4
• Why do we need interior cabin monitoring?
• Sensing is only the first step - What about detection and classification?
Alain Dunoyer, Head of Autonomous Car Division, SBD, UK

10:45  Achieving a sufficient Level of Perception & Prediction Accuracy in Sensor Suites
• Primary indicators of level 4 and 5 autonomy technology readiness
• Limitations in long-range perception and prediction
• Key perception challenges
• Combining dynamic object tracks and camera information
Hemant Sharma, Head of Department, Advanced Safety Systems & Software, Aptiv, Germany

II. Advanced Sensing Solutions and Future Requirements (Part I)

11:15  Vehicle-Level-Performance-driven Sensor Selection and Specification
• Vehicle-level-performance cascade to active chassis systems requirements
• High-level controls strategy definition based on active systems requirements
• High- and low-level controls strategy leading to sensor selection and specification
Dr.-Ing. Basileios Mavroudakis, Sr. Manager – Advanced Technology & Control Systems, Aston Martin Lagonda, UK

11:45  An efficient Method for vehicular Radar System Integration
• Controversy requirements in terms of sensor coverage vs. redundancy of information
• Sensor performance and clash with surrounding parts
• Prediction of installed performance before prototyping
Niels Koch, Component Owner Radar Systems, Audi AG, Germany

12:15  Lunch

13:45  Adverse Weather Effect on automotive Radar
• Automotive sensors need to operate in adverse weather conditions
• Radar is the most weather agnostic sensor
• Current radar loss models are not accurate for heavy rain/snow conditions
• Challenges of automotive radar operation in adverse weather
Daniel Flores Tapia, Staff Radar Engineer, Cruise, USA

14:15  Interactive World Café Session
During the interactive World Café Session, we invite you to directly engage with other experts. Discuss and identify challenges within your sector as well as problems, needs and solutions.

Exemplary Topic:
• Early Sensor Fusion – A mean to fully exploit the Potential of Data Fusion?
• Simulation & Validation of Sensor Functions

15:30  Networking & Coffee Break

Advanced Sensing Solutions and Future Requirements (Part II)

16:00  The Race to a Low Cost LiDAR System
• Different flavors of LiDAR, the supply chain, commercial aspects and potentials
• Benchmarking LiDAR approaches regarding cost, maturity timeline and integration
• Review of the current LiDAR supply chain and market players
Chidananda Panigrahi, Sr. Technical Research Analyst, IHS Markit, Germany

16:30  Solid-State LiDAR – Towards Low-Cost 3D Sensing
• State-of-the-art LiDAR technologies
• The solid-state LiDAR sensor approach
• SPAD arrays for highly sensitive LiDAR detectors
• Novel BSI technology for high resolution SPAD arrays
Werner Brockherde, Head of Optical Sensor Systems, Fraunhofer IMS, Germany

III. Mapping Technologies for Vehicle Perception

17:00  Mapping the Road to Autonomous Driving
• Why ADAS and AD need digital maps
• Building and maintaining HD Maps
• Completing the car-to-cloud-to-car HD map loop
• Using AI for map making and semantic segmentation
Alessio Colombo, Manager Software Engineering, TomTom, The Netherlands

17:30  Slot reserved for NIO
Divya Agarwal, Software Engineer, NIO, USA

18:00  End of Conference Day One

Get-together
At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.
09:00 The Social Nature of Perception

- Social nature of traffic as an underappreciated aspect of AV's
- Social nature of our species impacts the very nature of our perception
- Norms define how we perceive the world
- Taking for granted that others share our way of understanding the world
- Addressing the social nature of perception

Erik Vinkhuyzen, Autonomous Driving Researcher, Alliance Innovation Lab Silicon Valley, USA

12:00 Sensor Fusion Data Annotation and Validation

- What is sensor fusion?
- Challenges with sensor fusion data
- Annotation and validation of sensor fusion data

Mohammad Musa, Founder & CEO, Deepen AI Inc., USA

12:30 🍽️ Lunch

VI. Testing, Simulation & Validation of Sensor Functions and ADAS Systems

13:30 Challenges of synthetic Scenario Generation for ADAS Development

- ADAS innovation relies on massive amounts of data
- ADAS / AD system requirements and challenges
- Sensor Data and Scenario requirements and challenges
- Hardware requirements depending on sensor model and scenario complexity

Dr. Florian Baumann, CTO Automotive & AI, Dell EMC, Germany

14:00 Safety Validation of Sensor Functions for Autonomous Driving under complex environmental Conditions

- Reliability assess of sensor technologies under real environmental conditions
- Modeling complex environmental conditions in simulation
- Replacing physical testing with simulations that replicate AV performance and operating scenarios
- Embedded software code that meets the safety standards is critical

Günter Hasna, Director Application Engineering EMEA and Team Lead Sensors and Photonics, Ansys, Germany

14:30 Testing HAD Systems with Simulation

- Importance of simulation in verification and validation of highly automated systems
- Standardization and safety requirements for simulations
- Correlation of measurement data and models

Dr. Juergen Holzinger, Program Manager ADAS Project House, Global Research & Technology Management, AVL, Austria

15:00 ADAS low Speed Maneuvering: An active Area for Core AD Functions to be developed and verified in Mass-Production

- Gap between current and expected ADAS and AD systems
- Enable 3D sensing using low cost sensors by available ADAS ECU
- Advanced sensor fusion to compensate the deficiencies of one by the abilities of others

Dr.-Ing. Duong-Van Nguyen, Head of ADAS, Panasonic Automotive Systems Europe GmbH, Germany

15:30 Conference Chair’s closing Remarks

15:45 End of Conference
Building the general Safety Concepts for AV’s - Defining the Principals of Functional Safety

Workshop Chair:
Håkan Sivencrona, Safety Program Manager, Zenuity, Sweden

Date and Venue:
February 10, 2020, Rilano Hotel, Munich

Time:
09:00-16:00

Content:
Functional Safety is a truly interdisciplinary challenge: From environment perception over safety critical sensing to decision making and vehicle control, functional safety principles are vital. No question, ADAS research and development of new concepts, including verification, ODD expansion and definition or risk consideration will play a key role in the upcoming years. This interactive workshop covers everything from defining the safety norm and product definition to ODD definition and system design. Focus will be on J3016, ISO 26262, SOTIF and use cases of applying ISO 21448, underlined by real world examples. The scope and clarity of SOTIF, which tackles hazardous behavior of a system free from E/E system faults, is compared to the one of ISO 26262. The workshop contents are partially based the Swedish research project ESPLANADE.

Introduction
• Overview of J3016
• Background and Motivation of ISO 26262 and SOTIF
• SOTIF: Status, objective, problems and what it does not solve

Main Part - ADS Functional Safety Concept
• Operation Design Domain (ODD)
• Sensors and perception capability
• Decision making and control
• Dynamics
• Vehicle Control
• Actuation capability

Breakout Sessions in Groups
• Apply the functional safety framework to different use cases
• How will this affect the approach to vehicles systems safety?

Discussion and Conclusion
• Key takeaways
• How will this be realistically applied to day-to-day?

(Please note that the number of participants is limited. Registrations and individual parts and segments of the workshop are subject to confirmation)
Exhibition / Sponsoring

If you want to meet with and reach out to the first-rate experts attending this VDI conference and to powerfully present your products and services to the well-informed community of conference participants, please contact:

Martina Slominski
Project Consultant
Exhibitions & Sponsoring
Phone: +49 211 6214 - 385
Fax: +49 211 6214 - 97385
Email: slominski@vdi.de

Become a speaker

Become a speaker at our international VDI Conferences. Make yourself known in the industry and discuss best practice examples with other international experts. We are looking for speakers on: Testing & Validation for Automated and Autonomous Driving, Autonomous & Electrified Buses, Alternative Drives for Cars, 48Volt, Charging Infrastructure, Automotive Sensors, Automotive AI, Cyber Security for Vehicles, Future Mobility and Functional Safety.

Please submit your topic to:

Leonie Bohnstedt
Product Manager
International Business
Phone: +49 211 6214 - 461
Email: bohnstedt@vdi.de

Terms and Conditions

Registrations: Registrations for conference attendance must be made in writing. Confirmation of your registration and the associated invoice will be mailed to you. Please do not pay your conference attendance fee until you have received our invoice and its invoice number to be stated for transfer. German VAT directives apply. Please state your VAT-ID with your registration.

Conference venue
The Rilano Hotel München
Domagkstr. 26
80807 Munich, Germany
Phone: +49 89/36001-0
Email: info@rilano.com

Hotel room reservation: A limited number of rooms has been reserved for the benefit of the conference participants at the The Rilano Hotel München.

Please refer to “VDI Conference”. For more hotels: www.vdi-wissensforum.de/hrs

VDI Wissensforum service package: The conference package includes the conference documents (online), beverages during breaks, lunch and the get together on February 11, 2020.

Conference attendance conditions and terms: By way of your registration you accept the conference attendance conditions and terms of VDI Wissensforum GmbH as binding. Any cancellation of your registration must be made in writing. We will charge you only an administrative fee of € 50.00 plus Germany VAT if you cancel your registration earlier than 14 days ahead of the conference date. Any cancellation that reaches us after this deadline will entail the conference attendance fee as stated in our invoice to be charged in full. The date of the post office stamp of your written cancellation will be the decisive criterion. In that case, we will gladly mail you the conference documents on request. Subject to agreement, you may name a substitute participant. Individual parts and sections of conferences and seminars cannot be booked. You will be informed without delay if an event has to be cancelled for unforeseeable reasons. In that instance, you will be entitled only to a refund of your conference attendance fee if already paid. We reserve the right to exchange speakers and/or change the program sequence in exceptional cases. In any case, the liability of VDI Wissensforum GmbH is restricted exclusively to the conference attendance fee.

Data protection: VDI Wissensforum GmbH captures and processes the address data of conference participants for their own corporate advertising purposes, enabling renowned companies and institutes to reach out to participants by way of information and offers within their own marketing activities. We have outsourced in part the technical implementation of data processing to external service providers. If you do not want to receive any information and offers in the future, you may contradict the use of your personal data by us or any third parties for advertising purposes. In that case, kindly notify us of your contradiction by using the email wissensforum@vdi.de or any other of the contact options mentioned.
Yes, I will participate as follows:

Participation Fee + VAT
☐ VDI Conference 11.-12.02.2020 (01KO921020) € 1840
and ☐ Workshop 10.02.2020 (01ST953001) € 950
or ☐ Package Price (Please tick the boxes)
☐ (Conference + 1 Workshop) € 2510

☐ I am interested in sponsoring and/or exhibition
☐ Participation Fee VDI-Members* Save 50 € for each Conference Day.
* For the price category 2, please state your VDI membership number

VDI membership no. Title

First Name

Last Name (Family Name)

Company/Institute VAT-ID

Department

Street

ZIP Code, City, Country

Phone Fax

Email

Please state your invoice address if this differs from the address given

Participants with an invoice address outside of Austria, Germany and Switzerland are kindly requested to pay by credit card.