

DSC



24-26 SEPTEMBER 2025

G U I D E B O O K



DSC 2025 **EUROPE** **XR**

Driving Simulation & eXtended Reality Conference & Exhibition

Haus der Wirtschaft, Stuttgart | Germany

Organized by



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DSC 2025 EUROPE XR

Driving Simulation & eXtended Reality Conference & Exhibition

The Driving Simulation Conference gathers driving simulation specialists from the industrial and academic communities as well as commercial simulation providers. This 24th edition follows that of 2024, held in Strasbourg, in a hybrid version with about 300+ participants. The exhibition is coming back towards more than 40 professional exhibitors and up to 400 on site participants. With about 80 speakers in scientific and industrial product solution sessions, keynotes, tutorials and round tables, you will get the latest trends in XIL (MIL, SIL, HIL, DIL, VIL, CIL) and XR simulation for ADAS, automotive HMI and driving simulation design, motion sickness and rendering, as well as connected and autonomous vehicle verification and validation.

Themes include state of the art in driving simulation technology, research and developments, extended with progressively emerging virtual and augmented reality (XR) developments. This year's program will also host a special session on virtual validation and certification tools for autonomous and connected vehicles along with advanced driving assistance system (ADAS) applications. Human factors and motion rendering nevertheless will stay as a now traditional axes of the conference.

You are welcome to the DSC 2025 Europe Conference organized by the Driving Simulation Association, in cooperation with Arts et Métiers Institute of Technology and Gustave Eiffel University, held on September 24-26 in Stuttgart for the conference and exhibition!



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We are committed to bringing you the best opportunity to meet and network with **many customers, prospects and partners** in the field of driving simulation.

Authors, keynote speakers and delegates are attending this conference with the common aim of hearing about the latest developments in the field and will be keen to learn about your technology and services. The conference is expected to attract more than **300 attendees**, which will ensure that the event has the buzz you need to generate interest in your products.

The DSC Organizing Team wishes to all participants and exhibitors a great time at the Driving Simulation Conference Exhibition 2025!



Haus der Wirtschaft
Willi-Bleicher-Straße 19, 70174 Stuttgart - Germany

Organizing Committee



Andras Kemeny | *Conference chair*

President, Driving Simulation Association
Member of Board of Directors, ASAM



Florent Colombet | *Program Co-Chair*

Treasurer of Driving Simulation Association
Innovation Project Manager, Renault



Jean-Rémy Chardonnet | *Program Co-Chair*

Driving Simulation Association
Professor, Arts et Métiers



Gerd Baumman

Head of Software Department
FKFS, University of Stuttgart



Hans-Peter Schöner

Driving Simulation Association
Senior Automobile Expert



Maryam Jafari Raviz | *Conference Assistant*

Driving Simulation Association



Lucile Frugier | *Conference Assistant*

Driving Simulation Association

The scientific committee is composed of recognized academics, OEM, Tier 1 or Standardisation body experts involved in driving simulation research activities in their organisations. Being member of the Scientific Committee involves also a commitment to avoid using his or her committee role in any individual consultancy activity, which may influence his or her objectivity in reviewing or any other undertaken committee task.

Chairman

Andras Kemeny	Driving Simulation Association (France)
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Scientific Committee Members

Mohammad Bahram	BMW Group R&T (Germany)
Gerd Baumann	FKFS (Germany)
Klaus Bengler	Technical University Munich (Germany)
Jost Bernasch	The Virtual Vehicle (Austria)
Jelte Bos	TNO (The Netherlands)
Heinrich H. Bülthoff	Max Planck Institute (Germany)
Frank Cardullo	State University of NY (United States)
Viola Cavallo	University of Gustave Eiffel (France)
Jean-Rémy Chardonnet	Arts et Métiers Institut of Technology (France)
Florent Colombet	Renault (France)
George Drettakis	INRIA (France)
Magnus Eek	VTI (Sweden)
Stéphane Espié	University of Gustave Eiffel (France)
Zhou Fang	Renault (France)
Martin Fischer	DLR (Germany)
Massimiliano Gobbi	Polytechnic University of Milan (Italy)
Jens Häcker	DHBW Stuttgart (Germany)
Siddartha Khastgir	University of Warwick (UK)
Joseph K. Kearney	University of Iowa (United States)
Franck Mars	CNRS (France)
Philippe Mathieu	University of Lille (France)
Frédéric Mérienne	Arts et Métiers (France)
James Oliver	Iowa State University (United States)
Jean-Christophe Popieul	Hauts-de-France Polytechnic University (France)
Paolo Pretto	Virtual Vehicle (Austria)
Richard Romano	University of Leeds (United Kingdom)
Joost Venrooij	BMW Group (Germany)

Technical Committee

The Technical committee is composed of recognized industrial experts or managers of OEM, Tier 1 or research institutes involved in the driving simulation industrial ecosystem. Being member of the Technical Committee involves also a commitment to avoid using his or her committee role in any individual consultancy activity, which may influence his or her objectivity in reviewing or any other undertaken committee task.

Chairman

Luz Amanda Garcia Galeano	EBUSCO (Netherlands)
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Technical Committee Members

Omar Amhad	NADS (United States)
Florent Colombet	Renault (France)
David Defianas	Stellantis (France)
Marius Dupuis	ASAM (Germany)
Vincent Honnet	SystemX (France)
Andras Kemeny	Driving Simulation Association (France)
Martin Peller	BMW (Germany)
Stéphane Régnier	Renault (France)
Martin Sevenich	Continental (Germany)
Georg Stettinger	Infineon (Germany)
Sebastian Wagner	BMW (Germany)

Keynotes are historically inspiring talks given by eminent scientists in the field of driving simulation, completed now by important industrial executives.



Ms. Yue Li | CTO and co-founder, IAE Group

"Practice for scenario based simulation accelerating the safe application of autonomous driving"

Car manufactures are exploring commercial implementation scenarios for autonomous driving, hoping to enhance product strength through this technology; Practical and feasible solutions are needed in regulation to form positive guidance and access. In the process of landing for autonomous driving, simulation testing based on a large-scale and systematic scenario library will play a key role in productization and market access. This keynote will focus on sharing the practical experience in China of scenario based L4 autonomous driving simulation testing.



Dr. Behrang Keshavarz | Senior Scientist, KITE Research Institute, UHN
Adjunct Professor, Toronto Metropolitan University

"Motion sickness: A challenge in real and simulated driving situations"

Motion sickness affects one in three people, with vomiting, nausea, dizziness, or headache being just few of the many symptoms. Two global mega-trends make motion sickness a major challenge to healthcare and industry in the upcoming decades: fully automated vehicles and Virtual Reality (VR) applications. Motion sickness is a serious concern for both technologies, jeopardizing their success and overall acceptance. In this presentation, Dr. Keshavarz will provide an overview of the phenomenon of motion sickness, with a specific focus on theoretical considerations, factors influencing individual susceptibility, measurement techniques, and potential solutions.



Pr. George Drettakis | Research Director, Inria

"The 3D Gaussian Splatting Adventure: Past, Present and Future"

Neural rendering has advanced at outstanding speed in recent years, with the advent of Neural Radiance Fields (NeRFs), typically based on volumetric ray-marching. Last year, Pr. Drettakis's group developed an alternative approach, 3D Gaussian Splatting, that has better performance for training, display speed, and visual quality and has seen widespread adoption both academically and industrially. In this talk, the 20+ year process leading to the development of this method will be described, including a short historical perspective on image-based and neural rendering over the years, that culminated with 3D Gaussian Splatting. Prof. Drettakis will then discuss 3D Gaussian Splatting, which provides high-quality real-time rendering for novel view synthesis using a novel 3D scene representation based on 3D Gaussians and fast GPU rasterization.

Industrial Keynote Speakers



Dr. Craig Brown | Director, BrownSim Ltd

"ProCue: Outcue the Competition"

Would you like to maximize the value of your simulator activities without additional R&D spend. Rejuvenate an old simulator instead of buying a new one? Would you like your sim drivers to have absolute confidence?

The majority of simulators in industry are underutilized. This is because the tuning or development of cueing algorithms is a time consuming process, one that cannot always be commercially justified. In the extreme case, bad cueing may render a multi-million dollar simulator worthless! Given these challenges, ProCue was conceived. With ProCue, one can fully realize the theorized and advertised potential of motion simulators, freeing your team to focus more on value generation and less on cueing research. In this keynote, Dr. Brown will show you how to "outcue" the competition.



Kilian Joerg | Product Manager for Testbench Systems, MdynamiX AG

"Hardware-in-the-Loop for Enhancing Steering Experience in Driving Simulators"

Steering feel is crucial for an enjoyable driving experience. Traditionally, it has been evaluated using real vehicle prototypes, which are often limited during the early stages of development. This presentation details MdynamiX's Hardware-in-the-Loop (HiL) systems, which integrate actual steering mechanisms into advanced driving simulators. This integration facilitates a precise and realistic assessment of steering dynamics early in the design process, leveraging real-time data and feedback to enhance the fidelity of simulation models.



Thomas Nguyen That | Chief Products and Strategy Officer, AVSimulation

"Title available soon"

Descriptive text available soon

OEM Automotive Keynote Speakers



Dr. Richard Romano | Staff Researcher, General Motors,
Visiting Professor, University of Leeds

"Human Centered Vehicle Design in the Age of Agile Software Development: The role of driving simulators massive simulation"

Driving simulation has been used for over thirty years by a range of automotive companies as part of the vehicle design process. Recently, as part of the Software Defined Vehicle (SDV) development process, agile software development has been integrated into the vehicle development process to leverage the wide set of benefits of the agile method. Typically driving simulators are developed by dedicated technical experts along side human factors specialists with experience with driving simulator-based experiments. This presentation will outline the history of driving simulation in the context of supporting the vehicle design process, typically as part of a waterfall development process as well as the typical agile software development method.



Ms. Tille Karoline Rupp | Head of Simulation, Porsche Engineering

"Driving Innovation: The Power of Simulation, AI, and Big Data in Accelerating Development & Validation"

As automated driving systems become more complex, efficient and robust validation methods are essential. By leveraging simulation, AI, and Big Data, we aim to shorten development and validation cycles, following the left shift principle to detect and resolve issues early.

This keynote highlights the role of automation throughout the entire V-model, ensuring seamless toolchains from development to validation. Standardized, reusable, and consistent data enable Software-in-the-Loop (SiL) and Hardware-in-the-Loop (HiL) testing, as well as driving simulators (Driver-in-the-Loop – DiL), on a shared foundation. In combination with an intelligent test concept, they form the key to efficient validation.



Dr. Joost Venrooij | Project Lead Real-time Multibody Simulation, BMW AG

"Utilizing BMW's driving simulation center: virtual development, real challenges"

In 2021, BMW inaugurated the world's largest driving simulation center, a pivotal element of the company's virtualization strategy aimed at achieving significant cost reductions in the vehicle development process. Realizing this goal necessitates not only the development of innovative virtualization methodologies and simulation techniques, but also their effective operationalization and utilization. This presentation will provide an exclusive behind-the-scenes perspective on the challenges we faced—and the solutions we implemented—in bringing BMW's driving simulation center to life. It will outline how advancements in vehicle modeling methods, motion cueing techniques, validation approaches, and some practical lessons learned, were brought together to make virtual vehicle development a reality.

FKFS Simulators Visits



During DSC 2025 you will have the opportunity to visit the Stuttgart Driving Simulator Test Center at FKFS and experience its latest developments. This visit is scheduled for September 24th, the first day of the event.

Since the start of operation in 2012, the large 8-axes simulator is continually improved in order to match new standards and requirements from industrial customers. It is being used for testing passenger cars as well as commercial vehicles and nowadays even features a full-scale truck cabin.

FKFS will show the simulator "in action" and give a brief overview on applications, such as chassis, powertrain and ADAS/AD development and human factors research.

FKFS

RESEARCH IN MOTION.

The visits are organized in five groups:

*Visit group A – 10h00 Visit group B – 11h00 Visit group C –
14h00 Visit group D – 16h00 Visit group E – 15h00*

FKFS, Stuttgart, Pfaffenwaldring 12, 70569 Stuttgart



The meeting point is at the main FKFS entrance.

S S2/S1/S3 > Pedestrian – 25 min from Stuttgart Hauptbahnhof,
Arnulf-Klett-Platz 2, 70173 Stuttgart.

Ph.: +49 711 685-65888

Fax: +49 711 685-65710

info@fkfs.de

Program

Thursday, September 25th 2025

8 am

REGISTRATION & COFFEE

8:45 am

CONFERENCE OPENING

König Karl Halle

"Augmented Reality and Autonomous Vehicles"

Andras Kemeny, Conference Chair
President, Driving Simulation Association
Member of the Board of Directors, ASAM

9:05 am

KEYNOTE

König Karl Halle

"The 3D Gaussian Splatting Adventure: Past, Present and Future"

Pr. Georges Drettakis
Research director, INRIA Sophia-Antipolis

9:30 am

SCIENTIFIC PAPER SESSION

XR

König Karl Halle

Chairman : Jonas Jansson

**Validation of the usability
of Head-Mounted Displays
in a highly dynamic driving
simulator**

*Heiderich, Martin (Honda R&D
Europe); Sasaki, Naoya; Yamada,
Masaya; Zantner, Frank*

PRODUCT SOLUTION SESSION

AI, Machine Learning & Database Generation

Reutlingen Konferenz Salle

Chairman : Massimiliano Gobbi

**Safekit-learn: Machine Learning
Safety Library**

*FERREIRA, Raul Sena (Continental
Automotive France, France); Guerin,
Joris*

9:55 am

XR

Examining the variations in situational awareness of distracted pedestrians using Markov Entropy modelling (Short)

Kudurupaka, Vamshi Krishna (Indian Institute of Technology Roorkee (IIT R)); Choudhary, Pushpa

9:55 am

Design and Validation of a VR-Based E-Scooter Simulator using a 3DoF Motion Platform (Short)

ORAVI AN, Ana-Maria (Technical University of Munich, Germany); PECHINGER, Mathias; LINDNER, Johannes; KOLB, Maximilian; ZHENG, Tian; BOGENBERGER, Klaus

AI, Machine Learning & Database Generation

AI-based simulation scenario generation from the ADScene scenario platform

MOHELLEBI, Hakim (Renault, France); Martyr, Louis; Vaillant, Eric; Arnoux, Emmanuel; Régnier, Stéphane; Moiro, Franck; Dipiazza, Stanislas; Theel, Florian

Enhanced toolchain from HD or SD Maps to OpenDRIVE and complex 3D urban simulation: automating high-fidelity content creation including detailed downtown environments with complex sidewalks, for ADAS and AV development (Short)

GASBARRO, Luca (AnteMotion Srl, Italy); Ragni, Matteo

10:30 am

BREAK

11:00 am

SCIENTIFIC PAPER SESSION

Perception & Human Factors

König Karl Halle

Chairwoman : Viola Cavallo

PRODUCT SOLUTION SESSION Simulation Design and Motion Control

Reutlingen Konferenz Salle

Chairman : Martin Peller

11:00 am

Perception & Human Factors

A Real-time Unconstrained EEG-Classifer for Mental Workload Monitoring

Osia, Seyed Ali (InnoBrain AB); Tahamtan, Zeynab; Zhao, Lin; Davari, Mahdi; Nybacka, Mikael

11:25 am

Effects of Steering Feedback via Noise, Vibration, and Harshness on Lateral Driver Performance in Dynamic Driving Simulators

BÖHLE, Maximilian (Kempten University of Applied Sciences, Germany; Technical University of Berlin, Germany); SCHICK, Bernhard; MÜLLER, Steffen

11:50 am

Impact of lighting conditions and motion blur on speed perception in driving simulation

COLOMBET, Florent (RENAULT, France); MERIEL, Camille; DESCHAMPS, Benoît; MIGNOTTE, Nicolas; REGNIER, Stéphane

Simulation Design and Motion Control

Workspace Constraints in Classical Cueing

BROWN, Craig Robert (BrownSim, United Kingdom)

DDS: An immersive simulation tool

Stanglmayr, Maximilian (AMST-Systemtechnik GmbH, Austria); Prokop, Günther

Advancing Full Spectrum Simulation: VI-grade's Roadmap from Latency Compensation to Immersive, Zero-Prototype Virtual Development

Michael Hoffmann (VI-grade, Germany); Dave Bogema

12:15 am

Perception & Human Factors

How We Roll – Realistic Bicycle Simulator for Cycling Behaviour Research (Short)

*Ochel, Lennart (VTI, Sweden);
Saparia, Smit; Weidel, My; Kircher,
Katja*

Simulation Design and Motion Control

Straight-forward Design of Driving Simulators Based on Use Cases (Short)

*BAUMANN, Gerd (FKFS, Germany);
SCHLÜTER, Marco; KEHRER, Martin*

12:30 am

LUNCH

2:00 pm

INDUSTRIAL KEYNOTE SESSION

König Karl Halle

Chairman : Andras Kemeny

"ProCue: Outcue the Competition"

Dr. Craig Brown

Director, BrownSim Ltd

"Hardware-in-the-Loop for Enhancing Steering Experience in Driving Simulators"

Kilian Joerg

Product Manager for Testbench Systems, MdynamiX AG

"..."

Thomas Nguyen That

Chief Products and Strategy Officer, AVSimulation

3:00 pm

INDUSTRIAL PITCHES

König Karl Halle

Chairman : Florent Colombet

"Integrated collision testing for automobile mobility"

Dr Alexis Mifsud - CEO Mobpti

"Transforming the realism and usability of driving simulation"

Sharan Ramachandran - Business Development Manager, rFpro

"The New Virtual Proving Ground: End-to-End Solutions"

Salman Safdar - Business Development Director, Ansible Motion

"Feels Like a Real Car": Creating Fully Immersive Driving Simulators"

Michael Hoffmann - Zero Prototypes Evangelist, VI-grade

4:00 pm

BREAK

4:30 pm

KEYNOTE

König Karl Halle

"Motion sickness: A challenge in real and simulated driving situations"

Dr. Behrang Keshavarz

Senior Scientist, KITE Research Institute, UHN
Adjunct Professor, Toronto Metropolitan University

4:55 pm

SCIENTIFIC
PAPER SESSION

Motion Sickness

König Karl Halle

Chairwoman : J-R Chardonnet

Personal visual-vestibular coherence and simulator sickness

*BOS, Jelte E. (TNO, Integrated Vehicle Safety, Netherlands;
Vrije Universiteit, Behavioural and Movement Sciences, Netherlands);
REUTEN, Anna Johanna Carola;
CHEN, Colleen P.; WOLBERS, Jelle J.H.; van Emmerik, Martijn, L.*

PRODUCT SOLUTION SESSION

ADAS

Reutlingen Konferenz Salle

Chairman : Martin Sevenich

Physical Radar Sensor Modeling with AVxcelerate: An Evaluation

*SUHRE, Alexander (Valeo, Germany); MESICEK, Jakub;
KILLEDAR, Vinayak; FOMIN, Petr;
MANDLIK, Michal; RAPP, Richard*

A Study on Generation of Randomized Parking Scene in Synthetic Environment

LEE, Younghoon (Hyundai Mobis Company, Korea); CHOI, Hyuckjun

5:20 pm

Motion Sickness

Comparing Simulator Sickness across Different Physical Motion Conditions in Younger and Older Adults

Nowosielski, Robert J. (KITE -Toronto Rehabilitation Institute, University Health Network; Department of Psychology, University of Toronto, T); Keshavarz, Behrang; Haycock, Bruce C.; CAMPOS, Jennifer L.

5:45 pm

Contextual Influences on Simulator Sickness: A Comprehensive Analysis of Demographics, Gaming Experience and Simulation Context Complexity

BERGEN, Melina (German Aerospace Center (DLR), Germany); Fischer, Martin

6:10 pm

Introducing Surrogate Measures for Objective Simulator Sickness Evaluation (Short)

LINDNER, Johannes (Technical University of Munich, Germany); BÖCKLE, Markus; PECHINGER, Mathias; BOGENBERGER, Klaus

6:30 pm

ADAS

Development of Advanced Rider Assistance Systems using Rider-in-the-Loop Simulators

Amelunxen, Hendrik (dSPACE GmbH, Germany); de Vries, Edwin

A CCAM testing environment based on mixed-reality approach

GALI, Amit Shivanappa (Siemens Industry Software Netherlands B.V, The Netherlands); FORRAI, Alexandru

ASAM Open Source Standards: Driving Innovation in Autonomous Driving Simulation (Short)

SADEK, Ahmed (ASAM e.V., Germany)

SESSION CLOSURE

8:00 pm

COCKTAIL PARTY



Let's meet at 8 pm
for our cocktail party!

Address available soon

Don't forget your badge and enjoy your evening!

Program

Friday, September 26th 2025

8:00 am

REGISTRATION & COFFEE

9:00 am

KEYNOTE

König Karl Halle

"Practice for scenario based simulation accelerating the safe application of autonomous driving"

Yue Li, CTO and co-founder, IAE Group

9:25 am

SCIENTIFIC
PAPER SESSION

ADAS

König Karl Halle

Chairman : Omar Ahmad

**Investigating the Role of
Simulation in the Approval
Process of Automated Vehicles
for Defined Operational
Domains**

*Hartmann, Katharina (German
Aerospace Center (DLR), Germany);
Bahn, Björn; Fischer, Martin;
Asbach, Lennart*

9:50 am

**Credibility of simulations
for the validation and homologation
of ADAS systems**

*ATTOU, Otmane (Valeo, France);
SOUALMI, Boussad; GAUTHEREAU,
Didier; MOHELLEBI, Hakim*

SCIENTIFIC PAPER SESSION

**Deep Learning for Prediction in
Driving Simulation**

Reutlingen Konferenz Salle

Chairman : Gerd Baumann

**Scooter Trajectory Prediction
at Signalized Intersection: Case
Study in Shanghai, China**

*CAUSEVIC, Azur (BMW, Germany;
Technical University Munich,
Germany); Brauer, Jens; Pfeuffer,
Fabian; Bogenberger, Klaus*

**Simulation in a replaying test bench
to characterize an ADAS camera**

*NOUATIEM GUIAFAING, Youri Mikhail
(IRT SYSTEMX, France); RIDZUAN,
Ammar; JAVID, Gelareh; GAUTHEREAU,
Didier; Jonsson, Karl-Henrik*

10:15 am

ADAS

Streamlining ADAS Subjective Testing: Simulator Requirements and Effective Test Methods (Short)

*Wei, Sijie (Munich University of
Applied Sciences, Germany); Becker,
Matthias; Schick, Bernhard*

Deep Learning for Prediction in Driving Simulation

Enhancing MPC-based MCA through Deep Learning for Adaptive Tuning (Short)

*AL-SERRI, Sari (Deakin University,
Australia); ASADI, Houshyar;
MOHAMED, Shady; QAZANI,
Mohammadreza Chalak; NAHVAND,
Saied i*

10:30 am

BREAK

11:00 am

SCIENTIFIC PAPER SESSION

Motion

König Karl Halle

Chairman : Martin Fischer

Development of longitudinal motion cueing algorithm with MPC and pre-positioning strategy

*FANG, Zhou (Renault, France);
NIDIOT, Jean-Michel; COLOMBET,
Florent; WAUTIER, Didier; REGNIER,
Stéphane*

SCIENTIFIC PAPER SESSION

Driving Simulation Applications and Validation

Reutlingen Konferenz Salle

Chairwoman : Luz Amanda Garcia Galeano

Validating Bicycle Simulators Active Steering in a CAVE Virtual-Reality environment

*Zheng, Tian (Technical University
of Munich, Germany); Pechinger,
Mathias; Lindner, Johannes;
Bogenberger, Klaus*

11:25 am

Motion

Autoscaling: Minimizing Immersion Disruption in Motion Cueing via Model Predictive Control

Jain, Vishrut (Technical University of Delft, Netherlands); Lazcano, Andrea; Happee, Riender; Shyrokau, Barys

11:50 am

Autoscaling: Minimizing Immersion Disruption in Motion Cueing via Model Predictive Control

Jain, Vishrut (Technical University of Delft, Netherlands); Lazcano, Andrea; Happee, Riender; Shyrokau, Barys

12:15 am

Optimization-based Motion Cueing Algorithm for Worst Case Maneuvers in Driving Simulation

JACUMET, Robert (BMW Group, Germany; Technical University of Munich, Germany); WETZEL, Janik; WAGNER, Sebastian; SCHWIENBACHER, Markus; WOLLHERR, Dirk; LEIBOLD, Marion

Driving Simulation Applications and Validation

Force-based ABS Validation through Driving Simulator

Amadini, Matteo (Politecnico di Milano, Milan, Italy); Cantoni, Carlo; Gobbi, Massimiliano; Mastinu, Gianpiero; Milivinti, Massimiliano

PRODUCT SOLUTION SESSION

Driving Simulation Applications and Validation

Reutlingen Konferenz Salle

Chairman : Martin Sevenich

Driver-in-the-Loop Testing of Genetic Algorithm-Tuned Active Anti-Roll Bar for Vehicle Lateral Stability

Sonnino, Samuel (Politecnico di Milano, Italy); Melzi, Stefano; Pirchio, Francesco; Verde, Raffaele; Caresia, Pietro; Manzoni, Alessandro; Vaini, Gianluca

Accelerate Engineering for Mobility (Short)

MELNIKOVSKY, Izhar (Foretellix); HÄMMERLE, Simone (Mathworks)

12:30 am

LUNCH

2:00 pm

AUTOMOBILE OEM KEYNOTE SESSION

König Karl Halle

Chairman : Andras Kemeny

"Driving Innovation: The Power of Simulation, AI, and Big Data in Accelerating Development & Validation"

Tille Karoline Rupp

Head of Simulation, Porsche Engineering

"Utilizing BMW's driving simulation center: virtual development, real challenges"

Dr. Joost Venrooij

Project Lead Real-time Multibody Simulation, BMW AG

"Human Centered Vehicle Design in the Age of Agile Software Development: The role of driving simulators"

Dr. Richard Romano

Staff Researcher, General Motors
Visiting Professor, University of Leeds

3:00 pm

SCIENTIFIC
PAPER SESSION

Simulation Design

König Karl Halle

Chairman : Zhou Fang

PRODUCT SOLUTION
SESSION

XR

Reutlingen Konferenz Salle

Chairman : Stéphane Régnier

3:00 pm

Simulation Design

Implementation and Validation of an optimized Hybrid Steering Modeling Method in a fully Immersive Driving Simulator

Dieing, Andreas (FKFS, Germany); Baumann, Gerd; Holzapfel, Christian; Kehrer, Martin; Reuss, Hans-Christian

3:25 pm

The upgrade of an advanced driving simulator: vehicle, visuals, sound and software stack.

VAN DER STELT, Machiel (University of Western Australia, Australia); Braunl, Thomas; Roberts, Paul

XR

MixedReality@Development – Merging the best of two worlds

LIU, Kai (BMW AG, Germany); Lenz, Dennis; Höpfinger, Martin; Himmels, Chantal; Köning, Lukas Leonard

Perpendicular Distance Measurement & Localization on Arbitrary Road Curves via VR Raycasting in Unity3D (Short)

GALI, Amit Shivanappa (Siemens Industry Software Netherlands B.V, The Netherlands); FORRAI, Alexandru

3:50 pm

CLOSING

König Karl Halle

4:00 pm

END

A teleoperation control center simulator for fleet operation of automated vehicles

GRABBE, Niklas (Technical University of Munich, TUM School of Engineering and Design, Chair of Ergonomics, Germany); HÜBNER, Maximilian; BENGLER, Klaus

Requirement Identification for Traffic Simulations in Driving Simulators

TARLOWSKI, Sven (Institute for automotive Engineering ika – RWTH Aachen, Germany); ECKSTEIN, Lutz

Driving Simulator Assessment of Speed-Adaptive Steering Ratios for Front and Rear Axles

Sonnino, Samuel (Politecnico di Milano, Italy); Melzi, Stefano; Mirra, Giacomo; Caresia, Pietro; Manzoni, Alessandro; Vaini, Gianluca

Driver state monitoring employing the Human Performance Envelope model

GOBBI, Massimiliano (Politecnico di Milano, Milano, Italy); Mastinu, Gianpiero; Previati, Giorgio; Uccello, Lorenzo; Ceriani, Riccardo; Lantieri, Claudio; Landini, Elisa; Castellano, Andrea

Advancing Vehicle Platooning Systems

HALIM, Carol Emad (BeamNG, Egypt); Ghantous, Milad Michel; Soubra, Hassan; Papamichail, Chrysanthi

Effects of Arousal on Takeover Performance in Highly Automated Driving

CAI, Yuan (Université de technologie de Belfort Montbéliard (UTBM), France); BERT, Nicolas; SASANGO HAR, Farzan; ZARE, Mohsen

Effect of Tactilely Perceivable Vibrations on Driver Behavior in Driving Simulators

HOLZAPFEL, Christian (FKFS, Germany); Reuss, Hans-Christian

Incorporating A Priori Statistical Situational Knowledge into Model Predictive Control Algorithms

LEGRAN, Philipp (RWTH Aachen, Germany); RUSS, Fabian; BECKMANN, Jobst; TARLOWSKI, Sven; ECKSTEIN, Lutz

Development of a Questionnaire for Assessing Subjective Fidelity in Dynamic Driving Simulators

Pelzer, Julia (RWTH Aachen University, Germany); Altmann, Stella Marie; Russ, Fabian; Günther, Thomas

Analyzing driving speed using Mixed Regression Models with Random Effects based on driver profile

RIBEIRO, Ruy Santos (Sao Carlos School of Engineering – University of Sao Paulo, Brazil); ALBARRACIN, Orlando Yesid Esparza; LAROCCA, Ana Paula C.; BERNUCCI, Liedi Legi B.

Enhancing MPC-based MCA through Deep Learning for Adaptive Tuning

Al-serri, Sari (Deakin University, Australia); Asadi, Houshyar; Mohamed, Shady; Qazani, Mohammadreza Chalak; Nahvand, Saied i

Influence of visual output devices on speed perception in car simulators

Rehm, Michaela Jaqueline (German Aerospace Center (DLR), Germany); Gröne, Kilian; Bergen, Melina; Fischer, Martin

Use Case Specific Selection of Motion Cueing Algorithms and Tuning for Lateral Dynamics on Multi-Axes Motion Systems

SCHLUETER, Marco (FKFS, Germany); Holzapfel, Christian; Gerd, Baumann

Correlation between LiDAR point cloud intensity and fog level: mathematical modeling and attenuation Simulation

NOUTATIEG GUIAFAING, Youri Mikhail (IRT SYSTEMX, France); RIDZUAN, Ammar; JAVID, Gelareh; GAUTHEREAU, Otmane

Quantifying the Driving Performance of Reference Driver Models for AD Evaluation in Highway Scenarios

BECKMANN, Jobst Nikolaus Bertram (RWTH Aachen University, Germany); ECKSTEIN, Lutz

Comparison and Experience from using Mixed and Virtual Reality Headsets for Driving, Pedestrian, and Bicycle Simulators

ANDERSSON, Anders (Swedish National Road and Transport Research Institute (VTI), Sweden); ARAMRATTANA, Maytheewat

Advancing cognitive load detection in simulated driving scenarios through deep learning and fNIRS data

KHAN, Mehshan Ahmed (Deakin University, Australia); Asadi, Houshyar; Qazani, Mohammad Reza Chalak; Najdovski, Zoran; Oladazimi, Sam; Lim, Chee Peng; Nahavandi, Saied

Experience first, then build

GRÖTZINGER, Jonas (EDAG Engineering GmbH)

A smart assistive crosswalk to alert distracted pedestrians at a signalized intersection

*Kudurupaka, Vamshi Krishna (Indian Institute of Technology Roorkee (IIT R));
Choudhary, Pushpa*

A Tool to perform Scenario-based Evaluation of Non-Driving Related Activities using Mixed Reality

*SUBRAMANIAN, Thirumanikandan (Institute for Engineering Design and Industrial Design, University Stuttgart, Germany); SCHAEFFER, Miriam;
REMLINGER, Wolfram*

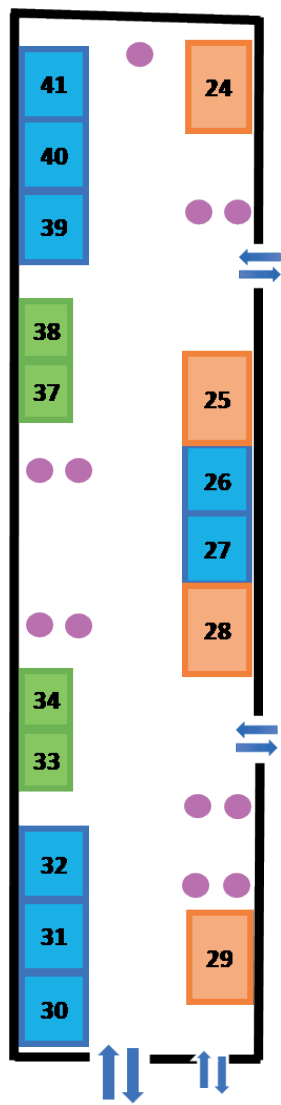
A Study on the Evaluation Method of Image Recognition Performance Using Simulation

PARK, Kyunwoo (Hyundai Mobis, Korea)

Unlocking Potential: Integrating XiL Models in Driving Simulators for Enhanced Brake, Steering, and ADAS Systems

Trunzer, Stefanie (University of Applied Sciences Kempten, Germany); Tworek, Anton; Schick, Prof. Bernhard

Max-Eyth Saal



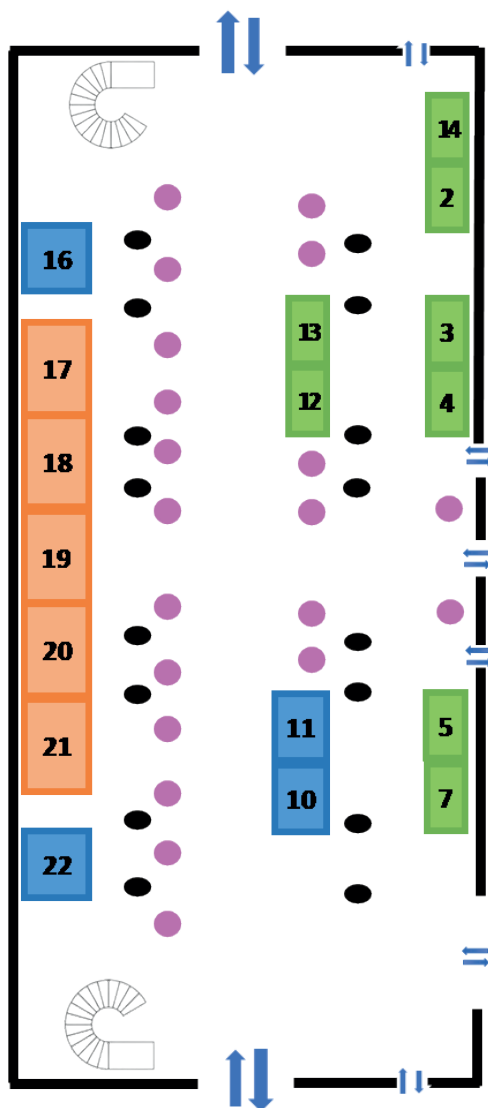
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We also offer custom engineering services for tailored integration and support.

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ASAM e.V. is a not-for-profit organization that promotes standardization in automotive development, testing, validation and diagnostics. ASAM 'accelerates engineering for mobility' by providing a platform and bringing experts together to agree on standards, exchange information, and to allow collaboration in a legal and anti-trust compliant way. ASAM standards span a wide range of use cases in automotive development, test, and validation. They define file formats, data models, protocols, and interfaces. All ASAM standards aim to enable easy exchange of data and tools within and across tool chains. They are applied worldwide.

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- ASAM OpenODD 1.0.0 specifies a standardized data model to describe the operational domain (OD), current operational domain (COD), and the operational design domain (ODD) for ADAS, DCAS and ADS. It provides a technology-independent data model in UML, defining how taxonomies and related concepts are structured and interconnected, and details how these elements are represented and exchanged.

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The Fraunhofer Institute for Industrial Mathematics ITWM is one of the world's largest mathematical research institutes. We see our task in further developing mathematics as a key technology, in giving innovative impulses, and in implementing them practically together with industrial partners. The close cooperation with partners from industry guarantees the high practical relevance of our work. Our area "Mathematics for Vehicle Development" (MF) is divided into the two departments "Dynamics, Loads and Environmental Data" (DLU) and "Mathematics for the Digital Factory" (MDF) as well as the tire simulation project group and the cross-sectional unit MF Technical Center, which takes care of testing and measurement technology. In particular, we develop methods and tools for system simulation involving environmental data and usage variability.

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Arts et Métiers Institute of Technology is a French « Grande Ecole d'Ingénieur » founded in 1780 specializing in mechanical, industrial and energy engineering. The Laboratory of Engineering in Cyberphysical Systems (LISPEN) has an education and research team specialized in XR for 25 years with extensive work on individualized interaction in immersive environments, cybersickness reduction and perception issues. The team has large immersive facilities including a 5-sided CAVE, head-mounted displays, multi-sensory interaction devices, physiological and behavioral measurement devices. LISPEN has also an activity in driving simulation, with facilities including dynamic and static simulators, coupled with immersive technologies, and addressing scientific issues related to HMI, simulator sickness, perception and motion cueing.

www.institutimage.ensam.eu



The Driving Simulation Association (DSA) aims to promote and encourage driving simulation and XR within all aspects: research, development, applications, and products, facilitating communication between individuals and academic as well as industrial organizations and contributing to the organization of scientific conferences. DSA is also proposing dedicated services in the use of driving simulation and XR.

driving-simulation.org

Since 1927, the "Société des Ingénieurs de l'Automobile" (Automotive Engineers Society) brings together all the specialists and enthusiasts of the automotive industry and its technologies. It has more than 1,800 individual or group and relies on a database of more than 18,000 car experts and our aim is to promote the development and knowledge sharing of engineers, managers and technicians in the automotive field. SIA is built on its diverse communities of experts covering all areas of new technologies in product engineering as well as quality, purchasing and production from the automotive and reflects on the vast stakes of the second automotive revolution, with the 21st century in the spotlight: autonomous vehicle, hyper connected vehicle, revolution towards affordable zero emission and electrification, Big Data and cybersecurity or the emergence of artificial intelligence.

SIA is renowned in the world of automotive engineering for its conferences, workshops and congresses of international level through more than thirty annual scientific meetings.

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The Gustave EIFFEL University was born out of the merger of Université Paris-Est Marne-la-Vallée and IFSTTAR, the Institute for European Research on Cities and Regions, Transport and Civil Engineering. It includes a school of architecture, EAV&T, and three engineering schools, EIVP, ENSG Géomatique and ESIEE Paris. By creating for the first time in France a three-way partnership between a university, research organisations and schools of architecture and engineering , it will have the specific purpose of fostering national and international partnerships to meet the major societal challenges generated by the profound changes in urban areas, which are already home to 55% of mankind.

www.univ-gustave-eiffel.fr



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- Learn more about the full ASAM OpenX portfolio at our booth.

www.asam.net

Ansible Motion creates and deploys a wide range of Driver-in-the-Loop (DIL) simulators around the world for all types of vehicles, driving scenarios, experiments and product development aims. From small desktop systems to full size dynamic simulators, Ansible

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www.avesreality.com

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www.eviden.com

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www.fkfs.de

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www.mdynamix.de

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www.rfpro.com

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Sensodrive Simulators. Perfect Simulations – Perfect Results. Sensodrive is a spin-off from the German Aerospace Center (DLR). The company was founded in 2003 by researchers from the DLR. Sensodrive is specialized in torque technology as well as in high-performance simulators. Sensodrive develops and produces tens of thousands of torque sensors and torque-controlled actuators every year for renowned companies worldwide. It was first company to launch specialized torque sensors for robotic drives. In addition to its leading role in drive technology, Sensodrive is known for its state-of-the-art force feedback products. The sophisticated simulators stand out due to sensitive force feedback and impressive realism. From the steering wheel to pedals, to rotary and push buttons, or an entire simulator cockpit – the Sensodrive simulators enable highend simulations in research and development. You're not just anybody. And our products aren't just any products. Welcome to Sensodrive.

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3

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www.vi-grade.com

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www.safetypool.ai



Driving Simulation Association

The *Driving Simulation Association* aims to:

- **promote and encourage driving simulation in all its aspects:** research, studies, developments, applications and products;
- **facilitate communication between people** involved or interested in driving simulation;
- **contribute to the organization of scientific conferences in the area of driving simulation**, Driving Simulation Conference (DSC) Europe, DSA seminars
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