

DSC



6-8 SEPTEMBER 2023

G U I D E B O O K



DSC 2023 EUROPE VR

Driving Simulation & Virtual Reality Conference & Exhibition

Palais des Congrès, Antibes | France

Organized by



With the cooperation and support of



Sponsored by





DSC 2023 EUROPE VR

Driving Simulation & Virtual Reality Conference & Exhibition

The Driving Simulation Conference gathers driving simulation specialists from the industrial and academic communities as well as commercial simulation providers. This 22nd edition follows that of 2022, held in Strasbourg, in a hybrid version with about **onsite 300 participants and more than 40 exhibitors**.

This year, DSC Europe 2023 VR is back with about 80 speakers in scientific and industrial product solution sessions, keynotes, tutorials, and round tables, you will get the latest trends in XIL 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 2023 Europe Conference organized by the Driving Simulation Association, in cooperation with Arts et Métiers Institute of Technology and Gustave Eiffel University, with the support of Smart Vehicles Côte d'Azur and SIA, sponsored by ASAM, AV Simulation, Dassault Systèmes, Epic Games, MathWorks, rFpro and SystemX, held on September 6-8 in Antibes for the conference and exhibition!



The way for tomorrow's vehicle

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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. This year's conference 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 2023!



Palais des Congrès d'Antibes
30, chemin des Sables, 06160 Antibes – France



WiFi : DSCCONFERENCE
Password : PDC092023



Organizing Committee



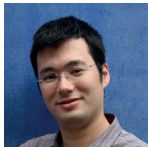
Andras Kemeny | *Conference chair*

President, Driving Simulation Association
Associate Professor, Arts et Métiers
Director, Laboratory of Immersive Visualization Renault-Arts et Métiers



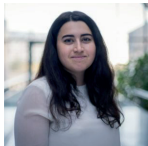
Florent Colombet | *Program Co-Chair*

Treasurer of Driving Simulation Association
Research Engineer, Renault



Jean-Rémy Chardonnet | *Program Co-Chair*

Driving Simulation Association
Assistant professor, Arts et Métiers



Tania-Marie Da Silva | *Conference Assistant*

Driving Simulation Association
Intern DSA



William Feith | *Conference Assistant*

Driving Simulation Association
Intern DSA



Ammar Ridzuan | *Conference Assistant*

Driving Simulation Association
PHD Student, Arts et Métiers Institute of Technology

Scientific Committee

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. Bühlhoff	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)
Massimiliano Gobbi	Polytechnic University of Milan (Italy)
Peter Grant	University of Toronto (Canada)
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	Marelli Europe S.p.A (Italy)
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Technical Committee Members

Omar Amhad	NADS (United States)
Florent Colombet	Renault (France)
David Defianas	Stellantis (France)
Benjamin Engel	ASAM (Germany)
Vincent Honnet	SystemX (France)
Andras Kemeny	Arts et Métiers, DSA (France)
Stéphane Masfrand	Stellantis (France)
Martin Peller	BMW (Germany)
Stéphane Régnier	Renault (France)
Armin Stähle	Daimler (Germany)
Georg Stettinger	Infineon (Germany)

Keynote Speakers

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



Peter Novaks | *Senior VP, aiData, aiMotive*

"How 3D Data processing enables automated driving development"



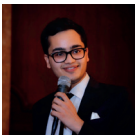
Olivier Sappin | *CEO CATIA, Dassault Systemes*

"Deliver safe-by-design automated driving innovations with MBSE & massive simulation"



Thomas Nguyen That | *Chief Product & Strategy Officer, AVSimulation*

"From virtual to Reality: accelerationg engineering with simulation"



Div Tiwari | *Senior Product Manager, Mathworks*

"Elements of Practical Scenario Variation"



Sébastien Lozé | *UE Business Director, Simulation, Epic Games*

"From CAD to AI, Technological Synergies for Next-Gen Simulators"

Wednesday, September 6th 2023

1 pm

REGISTRATION - 2nd floor

WELCOME DRINK - Espace Méditerranée - 3rd floor

1:45 pm

CONFERENCE OPENING - Antipolis Auditorium

Pr. Andras Kemeny | Conference Chair
(President, Driving Simulation Association
Member of the Board of Directors, ASAM)

2 pm

SPECIAL SESSION - Antipolis Auditorium
ADAS / AD validation process targeting homologation
Chairman : Georg Stettinger

2 pm

Plenary Talk
"Homologation - status quo and outlook"

R.DONA (EC/JRC)

2:25 pm

Insight Talks
"Current Industry and Research Activities
- Projects (Aithena, SUNRISE)
- Industry (OEM, Supplier, Tool Provider)"

O. OTAEGUI (VICOMTECH, Althena); S. DE VRIES (IDIADA, Sunrise); H. GOTZIG (Valeo); A. SCHMIDT (EasyMile); A. FORRAI (Siemens)

2:55 pm

KEYNOTE - Antipolis Auditorium

"Pegasus Project Family Perspective"
H. Moseback; F. Köster | DLR

3:15 pm

Plenary Talk - Antipolis Auditorium

"ArchitectECA2030:Reference Homologation Process"
J. Niehaus | SafeTRANS

3:45 pm

BREAK - Espace Méditerranée - 3rd floor

4:05 pm

SPECIAL SESSION - Antipolis Auditorium
ADAS / AD validation process targeting homologation
Chairman : Georg Stettinger

4:05 pm

Round Table

"How should collaborative European activities support homologation ? How can we avoid fragmentation of activities ? Relevance for CCAM ? How can we maximize the impact ?"

Speakers

Nicolas WAGENER (IKA)
Benjamin WILSCH (VDI/VDE-IT)
Siddhartha KHASTGIR (WMG)

4:30 pm

Talks

- "Roadmap to homologation**
- Scenario Data Base
- Multi-Pillar Testing Approach
- Safety Argumentation – ODD Coverage
- Safety Assurance
- Type Approval"

Siddhartha KHASTGIR (Safety Pool, WMG); Jann-Eve STAVESAND (dSPACE); Patrick WEISSENSTEINER (Virtual Vehicle); Fabrice HERVELEU (UTAC); Andreas RICHTER (Volkswagen)

5:20 pm

KEYNOTE - Antipolis Auditorium

"Insurance perspective on certification and homologation"
Daniel Weimer | CertAI GmbH, a Munich Re venture

5:50 pm

END of the DAY

Thursday, September 7th 2023

8 am

REGISTRATION - 2nd floor

WELCOME DRINK - Gould Exhibition Space - 2nd floor

9 am

KEYNOTE - Antipolis Auditorium

"How 3D data processing enables automated driving development"

Peter T. Kovacs | Senior VP, aiData, aiMotive

9:30 am

**SCIENTIFIC PAPER SESSION
Virtual Reality**

Antipolis Auditorium

**PRODUCT SOLUTION SESSION
ADAS / AD I**

Fitzgerald Room

9:30 am

Haptic Wheelchair Locomotion Simulator: Design with Experimental Validation

AIT-GHEZALA, AMEL (LAMIH UMR CNRS 8201 – UPHF); SENTOUH, Chouki; BENTALEB, Toufik; PUDLO, Philippe; POULAIN, Thierry; CONREUR, Gerald

Traffic simulation with human in the loop: roundabout scenario with reinforcement learning, edge computing and 5G connection

PREVIATI, Giorgio (DriSMi Driving Simulator); MASTINU, Giampiero; CAMPI, Elena; GOBBI, Massimiliano

9:55 am

Study of HMD tracking Systems Accuracy Applied to Short Head Displacements

DROUET, Thomas (Renault); CHARDONNET, Jean-Rémy; POSSELT, Javier; REGNIER, Stephane

A Virtual Testbed for Detecting Feature Interactions in ADAS/ AD Function Design

BACHOREK, Adam (Fraunhofer IESE); MEILER, Martin

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Thursday, September 7th 2023

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10:20 am

Parameterization and Validation of a Steering Wheel Torque Model (short)

RUSS, Fabian (Institute for Automotive Engineering (ika) RWTH Aachen University); LEGRAN, Philipp; REIFFERS, Joe; WAGENER, Nicolas; ECKSTEIN, Lutz

Introducing the COMPACT Full Spectrum Simulator (FSS): A Real-Time, Driver-in-the-Loop Simulator for Accurate and Cost-Effective Virtual Prototype Evaluations (short)

BOGEMA, Dave (VI-Grade), MINEN Diego

10:35 am

Virtual Reality training for interacting with an automated bus docking at a bus stop (short)

WEIDEL, My (Swedish National Road and Transport Research Institute); SJÖRS DAHLMAN, ANNA; ANUND, Anna

Digital twin for synthetic data generation – application for automated driving systems

HOTAIT, Hassan (HAN University of Applied Sciences); FORRAI, Alexandru

11 am

BREAK - Gould Exhibition Space - 2nd floor

11:30 am

INDUSTRIAL KEYNOTE SESSION - Antipolis Auditorium

Chairman : Andras KEMENY

11:30 am

"From Virtual to Reality: accelerating engineering with simulation"

Latest trends in AD/ADAS simulation, the role of XIL, AI, XR as well as massive simulation and the solutions AVSimulation is proposing to support the mobility market in its digital transformation.

Thomas Nguyen That | Chief Product & Strategy Officer, AVSimulation

11:50 am

"Elements of Practical Scenario Variation"

Driving simulation is an essential tool for developing and testing autonomous vehicles, enabling researchers and engineers to evaluate vehicle performance and safety under a wide variety of scenarios. However, creating scenario variations that are diverse and representative of real-world situations remains a significant challenge.

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This keynote explores challenges and opportunities related to the creation and variation of scenarios. We will discuss how elements such as extensibility, interpretability, and interoperability are essential to maximize the value gained from generating driving scenarios.

Div Tiwari | Senior Product Manager, MathWorks

12:10 am

"From CAD to AI, Technological Synergies for Next-Gen Simulators"

Today's efficient simulation systems integrate technology solutions from diversified sources to deliver a range of benefits. Machine learning capabilities that have been traditionally used for training autonomous vehicles, for example, are playing an increasingly important role in the content definition of simulation exercises. During this presentation, Unreal Engine Simulation Industry Director Sebastien Loze will highlight use cases that are accelerating the evolution of next-gen sims along with insights into the most recent advancements of Unreal Engine features for simulation.

Sébastien Lozé | UE Business Director, Simulation, Epic Games

12:30 am

LUNCH - Gould Exhibition Space - 2nd floor

1:55 pm

SHORT NOTES Scientific I

Antipolis Auditorium

SHORT NOTES Product Solution

Fitzgerald Room

1:55 pm

High-fidelity Learning-based Motion Cueing Algorithm by Bypassing Worst-Case Scenario

CHALAK QAZANI, Mohammadreza (Sohar University) et al.

Artificial Intelligence solutions for Time Latency Cancellation for Driving Simulator and Remote Simulator Subsystems Connection

FAINELLO, Marco (Addfor) et al.

2 pm

On the visual search of human drivers: an eye-tracker based study at a driving simulator

CIOFFI, Anthony (Politecnico di Milano) et al.

Using the Unreal game engine for Multi-User-Simulation – First impressions

GRÖNE, Kilian (Institut für Verkehrssystemtechnik) et al.

- 2:05 pm The effect of different infrastructures on driver response to a crossing pedestrian: a distributed simulation study
YAND, Yue (University of Leeds) et al.
- 2:10 pm Technical adjustments of a bicycle simulator – Impact on simulator sickness, presence and acceptance
MARTINEZ GARCIA, Donaji (German Aerospace Center) et al.
- 2:15 pm A Virtual Reality Environment to Develop a Collision Warning System for Police Officers on the Roadway
MOHAMMADI, Ahmad (York University); et al.
- 2:20 pm User-centered evaluation of a motorcycle riding simulator: 2D and VR
PASNICU, Otilia (TU Darmstadt) et al.
- 2:25 pm A Virtual Reality Wheelchair Simulator for Realistic Road User Behavior in Driving Simulations
PASNICU, Otilia (TU Darmstadt) et al.

Physics-based sensor models validation

FAUCHER, Florian (OKTAL-SE) et al.

Bay Zoltan's Driving simulation and Virtual Reality concept

LELKES, Mark (Bay Zoltán) et al.

SHORT NOTES
Scientific II

Fitzgerald Room

Reproducing perturbation pulses using a driving simulator for standing bus passenger

SAPARIA, Smit (VIT) et al.

Intelligent VR in Driving Simulator

HADADI, Azadeh (Arts et Métiers Institute of Technology, LISPEN, HESAM Université, UBFC, Karlsruhe Institute of Technology) et al.

2:30 pm

INDUSTRIAL PITCHES SESSION - Antipolis Auditorium

Chairman : Florent COLOMBET

"Dynisma : Drive ahead of the curve: Dynamic DIL simulators redefined"

Gavin Farmer | *Commercial Manager, Dynisma, United Kingdoms*

"SystemX : Boosting Digital Transformation"

Vincent Honnet | *R&D Manager – Thematic Referent "Connected Autonomous Transport", SystemX, France*

"Van Halteren Technologies : Finding the Sweet Spot for Advanced Driving Simulator Motion systems"

Rik de Swart | *Sales Manager Simulation Technology, Van Halteren Technologies, The Netherlands*

"Foretellix : Maximizing the Value of Simulation"

Dan Atzmon | *Head of Global Marketing, Foretellix, Israel*

"IPG Automotive : Virto, managing and optimising virtual test drives in the cloud"

Sylvain Chazot | *Managing Director, IPG Automotive, France*

"University of Leeds : Virtuocity a Centre for City Simulation"

Peter Woodthorpe | *Programme Manager – Virtuocity, Institute for Transport Studies, University of Leeds, United Kingdoms*

"Ansible Motion : Vehicle Development with Driver in the Loop"

Salman Safdar | *Business Development Director, Ansible Motion, United Kingdom*

"rFpro Transforming the realism and usability of driving simulation"

Josh Wreford | *PHead of Sales, rFPro, United Kingdom*

"Cruden: DIL system integration and how it can make or break the immersion in your simulator"

Dennis Marcus | *Commercial Manager, Cruden, Netherlands*

"ETSA : The European Voice of Modelling, Simulation & Training"

Quentin Blancheri | *Director, ETSA*

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Thursday, September 7th 2023

"VI-grade : Towards Zero Prototypes: Right Simulators and Right Models at the Right Time"

Michael Hoffmann | *Zero Prototypes Evangelist, VI-grade*

3:30 pm

BREAK - Gould Exhibition Space - 2nd floor

3:45 pm

SCIENTIFIC PAPER SESSION **Perception and Human Factors**

Antipolis Auditorium

PRODUCT SOLUTION SESSION **ADAS / AD II**

Fitzgerald Room

3:45 pm

Effects of Visualization Quality on the Sense of Presence in a Pedestrian Simulator

REHM, Michaela Jacqueline (German Aerospace Center); UTESCH, Fabian; GRÖNE, Kilian; TEMME, Gerald; ZHAO, Min; FISCHER, Martin

Tagging scenarios with custom metadata whilst retaining scenario exchangeability & Language Agnostic Automatic Scenario Tagging in ASAM OpenLABEL

ZHANG, X. (University of Warwick); BRUTO DA COSTA, A. A. (University of Warwick); FREEMAN, M.; KHASTGIR, S.; JENNINGS, P.; IRVINE, P. T.

4:10 pm

Driver behavior on a motion-base simulator for vehicle dynamics maneuvers

TRUNZER, Stefanie (UAS Kempten); SCHULER, Kevin; SCHICK, Bernhard

Holistic simulation and validation eco-system for testing of autonomous driving functions

PEPERHOWE, Michael (dSPACE); KRUMM, Holger

4:35 pm

Driver steer feel metrics for ADAS case: A human-centric driving simulator study

RIOS LAZCANO, Andrea Michelle (Toyota Motor Europe); CARRERA AKUTAIN, Xabier

ADAS Testing with RoadRunner Scenario

VALENTE, Michelle (MathWorks); FRANCOIS, Maxime; MILIA, Luigi

5 pm

Human-vehicle steering interaction during a transient maneuver

GOBBI, Massimiliano (Politecnico di Milano); MASTINU, Giampaolo; MILIVINTI, Massimiliano; PREVIATI, Giorgio; RIOS HIDALGO, Daniel

ODD Standards for AD/ADAS virtual testing

MOHELLEBI, Hakim (Renault); ARNOUX, Emmanuel; VAILLANT, Eric; REGNIER, Stéphane; KEMENY, Andras

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5:30 am

INDUSTRIAL KEYNOTE - *Cassin Auditorium*

"Deliver safe-by-design automated driving innovations with MBSE & massive simulation"

Olivier Sappin | *CEO, Catia, Dassault Systèmes*

7:30 pm

COCKTAIL DINNER PARTY

Let's meet at the Mediterranean space inside the Congress center to share our traditionnal cocktail dinner party!



Friday, September 8th 2023

Friday, September 8th 2023

8 am

REGISTRATION - 2nd floor

WELCOME DRINK - Gould Exhibition Space - 2nd floor

9 am

SCIENTIFIC PAPER SESSION
Motion Sickness

Antipolis Auditorium

PRODUCT SOLUTION SESSION
Sim Design

Fitzgerald Room

9 am

Modelling individual motion sickness accumulation in automated cars and driving simulators

KOTIAN, Varun (Delft University of Technology, Faculty of Mechanical, Maritime and Materials Engineering, Cognitive Robotics); POOL, Dan Marinus; HAPPEE, Riender

Real-Time 3-D Tire Modeling with FTire: Enhancing Vehicle Performance Predictions on a Hexapod Office Simulator Using CarMaker

RIEFF, Benjamin (Cosin scientific software)

9:25 am

Towards objective assessment of driving simulation sickness: Pros and cons of stomach electrical activity

MILJKOVIC, Nadica (University of Belgrade – School of Electrical Engineering); SODNIK, Jaka

Employing real-time multibody simulation in driving dynamics development

VENROOIJ, Joost (BMW AG); RATH, Lucas; SCHULTZE, Andreas; L'ERARIO, Maurizio

9:50 am

Within- and Between-Subject Designs in Driving Simulator Validation: A Case Study

HIMMELS, Chantal (BMW Group); VENROOIJ, Joost; PARDUZI, Arben; Riener, Andreas

Configurable gear shifter for HGV using haptic rendering, force fields and FSM

SKERMO, Jo (SINTEF); OPLAND, Robert; MOEN, Terje

10:15 am

SCIENTIFIC PAPER SESSION

PRODUCT SOLUTION SESSION

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10:15 am

SCIENTIFIC PAPER SESSION Motion I

Antipolis Auditorium

10:15 am - Driving Simulator
Experiment Stakeholder
Perspectives on Motion Cueing
Algorithm Quality (short)

*KOLFF, Maurice (BMW AG); VENROOIJ,
Joost; POOL, Dan Marinus; MULDER,
Max*

10:30 am - A Nonlinear Extension
to Classical Filters for Washout
Miscue Prevention (short)

BROWN, Craig Robert (BrownSim)

10:45 am - Motion Cueing
Algorithm for Effective Motion
Perception: A frequency
splitting MPC approach (short)

*JAIN, Vishrut (Technical University
of Delft); LAZCANO, Andrea; HAPPEE,
Riender; SHYROKAU, Barys*

PRODUCT SOLUTION SESSION Artificial Intelligence & Machine Learning

Fitzgerald Room

10:15 am - Digital Twin –
Generation and Variation in
Reinforcement Learning

*KUSSMAUL, Stephane (TrianGraphics
GmgH)*

10:40 am - Data synthetization
for verification and validation
of Machine Learning based
systems

*EBADI, Hamid (Infotiv); ROSELL,
Joakim; BUI, Thanh; MARSIK, Lukáš;
JENSEN, Jack; KARSBERG, Martin*

11 am

BREAK - Gould Exhibition Space - 2nd floor

11:30 am

SCIENTIFIC PAPER SESSION Artificial Intelligence & Machine Learning

Antipolis Auditorium

PRODUCT SOLUTION SESSION Motion II

Fitzgerald Room

11:30 am

Construction of a Surrogate
Model: Multivariate Time
Series Prediction with a Hybrid
Model

*CARLIER, Clara (Statistic Department
of Crest – Renault); FRANJU, Arnaud;
LERASLE, Matthieu; OREBSKI, Mathias*

AIC's Virtual Development
Center: Human-Machine
Interface design in driver in-
the-loop simulations

*DE LA FUENTE, Victor (AIC – Automotive
Intelligence Center); ROJO, Ander; NAVARRO,
Guillermo; LANDUBURU, Mikel*

Friday, September 8th 2023

EXHIBITION

EXHIBITION

	SCIENTIFIC PAPER SESSION Artificial Intelligence & Machine Learning <i>suite</i> <i>Antipolis Auditorium</i>	PRODUCT SOLUTION SESSION Motion II <i>suite</i> <i>Fitzgerald Room</i>
11:55 am	Prediction of Vehicle Motion Signals for Motion Simulators Using a Multivariate CNN-LSTM Model <i>ABDULRAQEB, Sheab Rawhan Adulsameea (Deakin University); ASADI, Houshyar; QAZANI, Mohamed Reza Chalak; MOHAMMED, Shady; NAHVANDI, Saied</i>	A Virtual Human Centred Design platform to support immersive experiences of future Automated Vehicles <i>BORNARD, Jean-Charles (Université Gustave Eiffel, ESI Group); BELLET, Thierry; RICHARD, Bertrand; TOFFETTI, Antonella; BALOCCO, Elena; MATEO MARTINEZ, Begoña; PALOMARES, Nicolas; PERIAGO, Cristina; JACKSON, James</i>
12:30 am	LUNCH - Gould Exhibition Space - 2nd floor	
2 pm	SCIENTIFIC PAPER SESSION AD/ADAS <i>Antipolis Auditorium</i>	SCIENTIFIC PAPER SESSION Motion II <i>Fitzgerald Room</i>
	2 pm - Road users early lightweight driving simulator for ADAS development <i>BARBIER, Alexandre (ESTACA'LAB); SAUDRAS, Sébastien; BARBEDETTE, Bertrand; LAROUCI, Cherif</i>	2 pm - Probabilistic Prediction of Longitudinal Driving Behaviour for Driving Simulator Pre-Positioning <i>KOLFF, Maurice (BMW AG – Delft University of Technology); EPPINK, Maurice; VENROOIJ, Joost; POOL, Dan Marinus; MULDER, Max</i>
	2:20 pm - Dynamic decision making for agent models in urban driving simulation <i>ROCK, Teresa (BMW Group – Technical university of Berlin); MARKER, Stephanie; BLEHER, Thomas; BAHRAM, Mohammad; DATTA SAVARAM, Narasimha; BERGER, Constantin; DRECHSLER, Maikol</i>	2:25 pm - Study of motion cueing algorithm based on multi-shooting replaying method for ROADS <i>FANG, Zhou (Renault); THEILLIER, Dominique; COLOMBET, Florent; WAUTIER, Didier</i>

2:45 pm - Deep reinforcement learning based-motion cueing algorithm for universal trajectories (short)

SCHEIDEL, Hendrik (Institute for Intelligent Systems Research and Innovation, Deakin University); SEEFRIED, Andreas; CHALAK QAZANI, Mohammad Reza; BELLMANN, Tobias; HOUSHYAR, Asadi; NAHAVANDI, Saied

2:50 pm - False cue reduction in motion cueing utilising the vehicle performance envelope

HVITFELDT, Henrik (Royal Institute of Technology – ECO2 Vehicle Design); JERRELIND, Jenny; DRUGGE, Lars

3 pm - Development and testing of an ACC system using a dynamic driving simulator with multi-drivers (short)

KOLFF, Maurice (BMW AG); VENROOIJ, Joost; POOL, Dan Marinus; MULDER, Max

3:15 pm

WORKSHOP ADScene

Antipolis Auditorium

PRODUCT SOLUTION SESSION Driver-In-Loop Virtual Reality

Fitzgerald Room

ADScene platform is a SaaS scenario library that provides tools to ensure safety of ADAS and AD.

Relevant scenarios and associated design functionality included in ADScene are already used by OEM during design and validation process.

This « hands-on » workshop will provide an in-depth experience of ADScene framework, data and tools for mobility stakeholders.

GUYONVARCH, Laurette
(Renault)

3:15 pm - Prototype the UX of Your Future Automotive Cockpit

SIGRIST, Pierre (EPICNPOC)

3:40 pm - Ika's highly Dynamic Driving Simulator (short)

WAGENER, Nicolas (RWTH Aachen University); RUSS, Fabian; BECKMANN, Jobst; LEGRAN, Philipp; ECKSTEIN, Lutz

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Friday, September 8th 2023

REVERT, Erwan; HONNET,
Vincent (SystemX)

AUTRIC, Pierre-Denis
(CapGemini)

3:55 pm - A Comparison of HMD
and CAVE-Driven Visualization
for Hand Interaction in Driving
Simulators

KROYS, Alexander (Volkswagen AG);
TEKCAN, Cagdas; HARTFIEL, Bert;
SCHIMMEL, Timo; ORTMEIER, Frank;
STARK, Rainer

4:15 pm

KEYNOTE - Antipolis Auditorium

"Insert Title"

Insert Presenter | *Insert Company*

4:45 pm

CLOSING - Antipolis Auditorium

DSC 2023 Europe VR Organization Committee

5 pm

END of DSC 2023 Europe VR

SCIENTIFIC POSTERS

High-fidelity Leaning-based Motion Cueing Algorithm by Bypassing Worst-Case Scenario

CHALAK QAZANI, Mohammadreza (Sohar University), ASADI, Houshyar; LIM, Chee Peng; NAHAVANDI, Saeid

On the visual search of human, drivers: an eye-tracker based study at a driving simulator

CIOFFI, Anthony (Politecnico di Milano); TESTORI, Alessandro; MELZI, Stefano

The effect of different infrastructures on driver response to a crossing pedestrian: a distributed simulation study

YAND, Yue (University of Leeds); LEE, Yee Mun; KALANTARI, Amir Hossein; GARCIA DE PEDRO, Jorge; HOROBBIN, Anthony; DALY, Michael; SOLERNOU, Albert; MARKKULA, Gustav; MERAT, Natasha

Technical adjustments of a bicycle simulator – Impact on simulator sickness, presence and acceptance

MARTINEZ GARCIA, Donaji (German Aerospace Center); GRÖNE, Kilian; JANSSEN, Véronique; JACOBI, Dennis; ACKERMANN, Stefanie; ZHAO, Min; NICOLAY, Eric; BERGEN, Melina; FISCHER, Martin

A Virtual Reality Environment to Develop a Collision Warning System for Police Officers on the Roadway

MOHAMMADI, Ahmad (York University); PARK, Peter Y.; ASGARY, Ali; MUKHERJEE, Abir; LIU, Xia

Reproducing perturbation pulses using a driving simulator for standing bus passenger safety

SAPARIA, Smit (VTI); JIA CHENG, Xu; MAYTHEEWAT, Aramrattana

Coupling full Human in The Loop experience with Hardware in The Loop Steering test bench architecture

ALFATTI, Federico (Meccanica); ANTICAGLIA, Alessio; VENEROSO, Luca; LELLI, Lorenzo; VITALITI, Daniele; ANNICCHIARICO, Claudio

User-centered evaluation of a motorcycle riding simulator: 2D and VR

PASNICU, Otilia (Politecnico di Milano); MENIG, Angela

Intelligent VR in Driving Simulator

HADADI, Azadeh (Arts et Metiers Institute of Technology, LISPEN, HESAM Université, UBFC – Karlsruhe Institute of Technology); CHARDONNET, Jean-Rémy; LANGOVOY, Mikhail; GUILLET, Christophe; OVTACHAROVA, Jivka

PRODUCT SOLUTION POSTERS

Using the Unreal game engine for Multi-User-Simulation – First impressions

GRÖNE, Kilian (Institut für Verkehrssystemtechnik); REHM, Michaela; MARTINEZ GARCIA, Donaji; TEMME, Gerald; QUANTE, Laura; ACHILLES, Marvin; FISCHER, Martin

Physics-based sensor models validation

FAUCHER, Florian (OKTAL-SE); LATGER, Jean

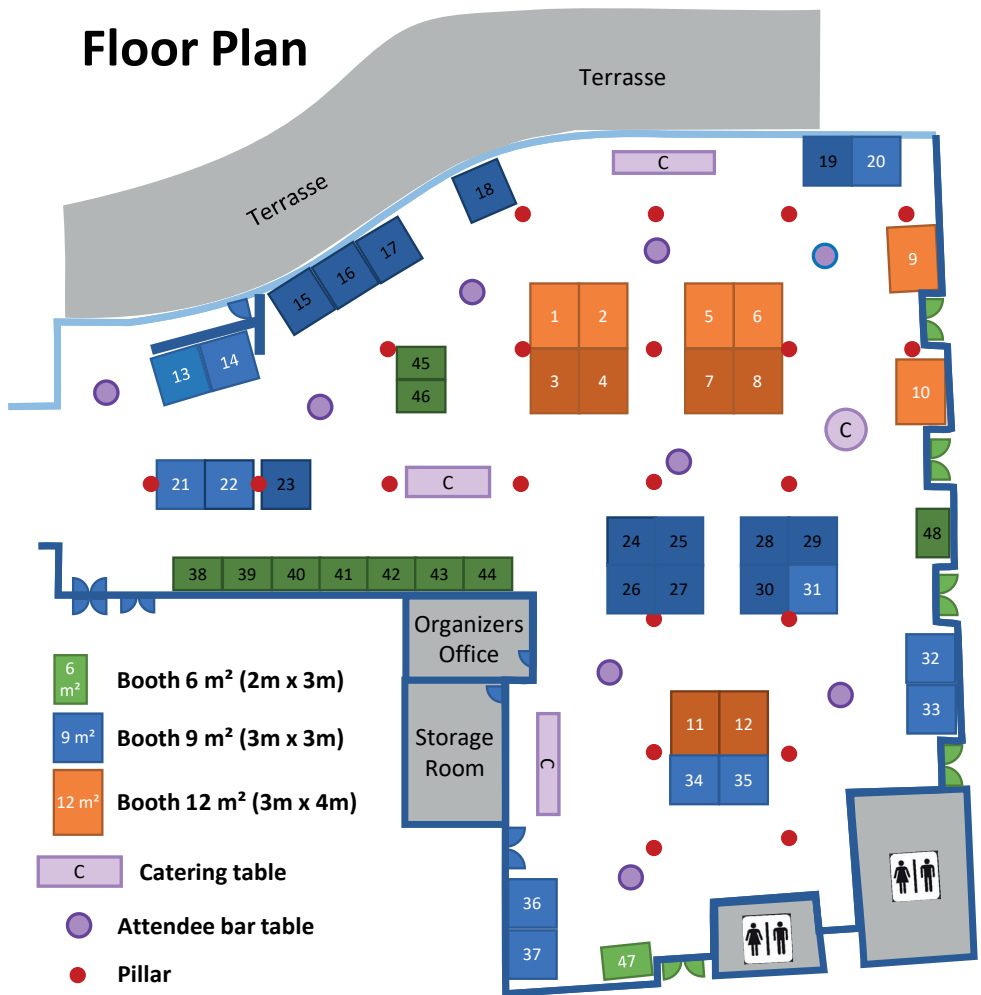
Artificial Intelligence solutions for Time Latency Cancellation for Driving Simulator and Remote Simulator Subsystems Connection

FAINELLO, Marco (Addfor); GIULIACCI, Tiziano Alberto; BALLELIO, Stefano; MINEN, Diego; DE VECCHI, Roberto; FORMAGGIA, Fabio; CARBONATI, Andrea; TRAININI, Daniele




Bay Zoltan's Driving simulation and Virtual Reality concept

LELKES, Marc (Bay Zoltán); SOOS' Robert; UNGAR, Peter; SZAVAI, Szabolcs; TUSKE, Tamas; NEMETH, Csaba

Floor Plan



Exhibitors List

 3D Mapping Solutions GmbH	#44		
 Ansible Motion	#29	 Infiled	#27
 Applied	#30	 MathWorks	#15
 Arts et Métiers Institute of Technology	#41	 NI	#26
 ASAM e.V.	#43	 rFpro Ltd	#28
 AVSimulation	#04	 Scale-1Portal	#42
 Cosin scientific software AG	#07	 Sensodrive GmbH	#18
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 Dassault Systèmes	#08	 Smart Vehicle Cote d'Azur	#39
 dSPACE	#16	 SystemX	#48
 Dynisma	#03	 Thierry Clémot	#45
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 Foretellix	#40	 University of Warwick	#24
 GP Screen	#27	 UTAC	#08
 ICT AG	#17	 VI-Grade	#11-12
 IPG Automotive	#25		

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Our flagship software, SCANeR™, enables automotive manufacturers and researchers to develop, test, and validate mobility systems within highly realistic virtual environments. From ADAS to autonomous vehicles, SCANeR offers diverse scenarios for assessing safety, performance, and functionality. With a range of simulators and custom solutions available, AVSimulation accelerates the development and deployment of all mobility systems, driving towards safer and more efficient transportation solutions.

www.avsimulation.fr

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www.renaultgroup.com



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www.unrealengine.com



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- Simulate driving scenarios
- Design planning and control algorithms
- Design perception algorithms
- Deploy algorithms using code generation
- Integrate and test.

www.mathworks.com

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ASAM e.V. is a non-profit organization that promotes standardization in automotive development. Together with its more than 400 member companies, ASAM develops standards that enable easy exchange of data and tools within and across tool chains. ASAM standards span a wide range of use cases in automotive verification and validation (V&V) and are in use worldwide.

The ASAM OpenX® standards in particular aim to provide a complete set of standards for simulation-based testing of automated driving functions. They cover a wide range of use cases for virtual development, including hybrid testing approaches that combine virtual and physical components. ASAM OpenX standards are gradually becoming the industry's reference for their respective use cases and are supported by a majority of simulation tool providers and manufacturers worldwide.

www.asam.net

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Dassault Systèmes is a sustainable innovation leader.

We provide business and people with 3DEXPERIENCE universes to imagine sustainable innovations capable of harmonizing product, nature and life. Our business is innovation. Thanks to the 3DEXPERIENCE platform, we provide software solutions that allow customers to create innovative new products and services using virtual experiences. Our aim is to build a new development model to address the major challenges facing the world today.

www.3ds.com

SystemX is a Research and Technology Organisation (RTO - Institut de Recherche Technologique - IRT), dedicated to the digital engineering of systems, and expert in the analysis, modelling, simulation and decision support for complex systems. SystemX coordinates partnership-based research projects, bringing together academics and industrials in a multidisciplinary and cross-cutting perspective. Together, they strive to lift key scientific and technological barriers to the benefit of 4 priority fields of application: Mobility and Autonomous Transport, Industry of the Future, Defence and Security, Environment and Sustainable Development. Within the framework of use-case oriented projects, SystemX researcher engineers answer the great challenges of our time, both for society and technology, thus contributing to accelerate the digital transformation of industries, services and territories.

www.irt-systemx.fr

With the cooperation and support of:



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



SVCA supported by Team Côte d'Azur, the Local Economic Development Agency, is promoting the Côte d'Azur region as an attractive land for smart vehicle players. At SVCA we act so that the connected and autonomous vehicle players are in favorable conditions to perform their R&D faster, cheaper and more efficiently for an optimal societal adoption of the new Mobility use cases and to Create a market-oriented scientific ecosystem, one that is driven by industry players present today and new entrants attracted by this ecosystem.

www.investincotedazur.com



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.

SIA participates actively in the French automotive industry in connection with the main professional organizations and on an international level as a member of the FISITA.

www.sia.fr



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



Booth n°44

BRINGING REALITY IN DIGITAL WORLDS

3D Mapping Solutions GmbH is one of the leading experts in the fields of high-accuracy kinematic surveying of public roads, proving grounds, race tracks and rough road test tracks of any kind. In addition, the high-end kinematic engineering surveying of railway tunnels or subway networks are core competences.

High-precision as built-plans are exported into appropriate formats including all objects, attributes and the complete, complex topological structure and thus may be used directly for customer applications. Examples are the use of high-fidelity maps as in-car reference for autonomous driving developments, simulation for vehicle dynamics development and driving simulation on digital twins of complete road networks.

www.3d-mapping.de



Booth n°29

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 Motion's products deliver class leading virtual test driving experiences. Featuring advanced computational and mechanical performance capabilities, they create compelling virtual worlds for drivers and product development engineers.

www.ansiblemotion.com

Applied Intuition is the foremost enabler of autonomous vehicle (AV) development. The company's suite of simulation, validation, and drive log management software makes it faster, safer, and easier to bring autonomy to market. AV programs across industries and 17 of the top 20 global OEMs rely on Applied's solutions to develop, test, and deploy autonomous systems at scale.

www.appliedintuition.com

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www.institutimage.ensam.eu

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www.asam.net

AVSimulation is a leading provider of advanced simulation solutions for the automotive industry and academia.

Our flagship software, SCANeR™, enables automotive manufacturers and researchers to develop, test, and validate mobility systems within highly realistic virtual environments. From ADAS to autonomous vehicles, SCANeR offers diverse scenarios for assessing safety, performance, and functionality. With a range of simulators and custom solutions available, AVSimulation accelerates the development and deployment of all mobility systems, driving towards safer and more efficient transportation solutions.

www.avsimulation.fr

cosin scientific software

Booth n°7

cosin scientific software AG offers simulation software for advanced tire and road surface modeling for vehicle dynamics simulation. The key product, FTire, is the leading high-frequency and multi-purpose tire model.

Development of the physical model started in the late 1980s and FTire subsequently established its position as the reliable and trusted tire simulation software for vehicle comfort, road loads and NVH analysis. Since 2009, FTire development, support, and engineering services are provided by cosin scientific software, headquartered in Munich, Germany.

Virtual testing is key and driving simulators and other hardware-in-the-loop systems are increasingly replacing real tests. The availability of FTire throughout the development cycle is unique and ensures consistency for all simulations.

Together with several partners worldwide, cosin scientific software offers the full range of support for tire data measurement, parameter identification, and road surface measurement

www.cosin.eu

Cruden is the world's leading designer, manufacturer and integrator of professional open architecture driving simulators for the automotive, motorsport, marine and motorcycle industries. We supply flexible, durable, high performing real-time simulators and their modular components: hardware, software, vehicle models, content and visual systems. Our driver-in-the-loop (DIL) simulators and Panthera Software Suite are designed to slot into customers' existing tool chains so their engineers can be up and running quickly with a future-proof system that does not tie them to any one supplier. Having recognized the potential of engineering simulators to save time and money through DIL testing since the 1990s, we have installed over 100 driving simulators globally and gained a firm reputation as a trustworthy simulator expert. ADAS/AD testing A Cruden simulator easily slots into a typical automotive test environment – for the development and validation of ADAS/AD controllers by hardware-in-the-loop (HIL) integration, for example. Integration is made possible by Panthera's ePhyse tool, conversion tools and integration work undertaken by Cruden with the suppliers of third-party packages commonly used by automotive OEMs and Tier 1s. We eliminate the need for complicated configuration work by our customers. Our simulators are created by people who understand the importance of human factor research, for the development of autonomous cars that customers can trust. We've helped many automotive teams design driver-in-the-loop experiments to validate human-machine handover control scenarios. Our technologies prioritise driver and passenger immersion, ensuring relevant and valuable feedback on autonomous controllers.

www.cruden.com

dSPACE is a leading provider of simulation and validation solutions worldwide for developing connected, autonomous, and electrically powered vehicles.

The company's range of end-to-end solutions is used particularly by automotive manufacturers and their suppliers to test the software and hardware components in their new vehicles, long before a new model is allowed on the road.

Our portfolio ranges from end-to-end solutions for simulation and validation to engineering and consulting services as well as training and support.

With more than 2,400 employees worldwide, dSPACE is headquartered in Paderborn, Germany, has three project centers in Germany, and serves customers through regional dSPACE companies in the USA, the UK, France, Japan, China, Croatia, South Korea, and India. dSPACE is a key player for ADAS and Autonomous Driving development and test. Many dSPACE systems are being used in those domains by Automotive OEMs and TIER1s throughout the world.

Visit our booth and discover our comprehensive tool suite for the design, development and test of ECUs for Autonomous Driving. See how our models and our virtual test technology are used to drive through huge numbers of scenarios. Discover comprehensive cutting-edge sensor models for Camera, Radar, Lidar. Use the latest technologies to generate raw sensor data out of a real time simulations. Take that simulated raw data to bypass real sensor input on the ECU, and get your sensor ECU to react in real time to the simulated sensor input. Also more to see on: Scenario based testing, Scenario Generation, Data Logging, etc.

www.dspace.com



Booth n°8

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www.3ds.com



Booth n°3

Dynisma deliver the most dynamic, realistic and scalable driving simulators in the world.

Dynisma Motion Generators (DMG) combine class leading latency and bandwidth with unlimited yaw excursion, large horizontal excursion, and high acceleration to deliver unrivalled vehicle dynamics simulation capabilities in the most immersive experience possible for a driver.

For automotive OEMs, our world-leading technology can be integrated with any vehicle model, track, terrain or visualisation environment, eliminating prototypes and helping bring manufacturers to new model delivery faster.

In motorsport, our simulators enable drivers and race teams to test their vehicle models on the limit, with DMGs supporting the engineering that leads to winning performance on the track.

Speak to one of our team to discover more.

www.dynisma.com



Booth n°38

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www.epicnpoc.com



Booth n°40

Foretellix is the leading provider of safety-driven verification and validation solutions for Automated Driving Systems and ADAS. Foretellix's Foretify™ platform helps automotive, trucking, and mining customers to ensure safety, reduce development costs, and accelerate time-to-market. Foretellix is headquartered in Israel, with offices in the US, Europe, and Asia. For more information, visit <http://www.foretellix.com>.

www.foretellix.com



Booth n°17

ICT AG is a solution and full-service provider in live communication with AV technology for trade shows, retail stores, events, TV & film, brand spaces, simulation environment and studios. In short: We build the best possible stage in space for big brands. And this for about 35 years.

www.ict.de

INFiLED is headquartered in Shenzhen and registered under the full name Shenzhen Infiled Electronics Co., Ltd. It is a high-tech enterprise specialized in developing and manufacturing large LED video equipment.

Focused on constant innovation and continuous improvement, INFiLED now owns over 100 patents, which is one of the highest numbers in the industry.

INFiLED's product range covers a wide range of applications, as there are advertisement, transportation, sports, events, command & control, corporate branding and meetings, creative applications and so much more. Our products have been installed in over 76 countries and our products have been CCC, CE, UL, ETL, FCC, RoHS and TUV certified.

Using the most advanced production equipment and the most reliable components, INFiLED delivers the highest quality and most reliable equipment available. INFiLED strictly carries out the ISO9001 Quality Management System, Total Quality Management System, ISO14001 Environment Management system and OHSAS18001 Occupational Health and Safety Management System. INFiLED has grown fast over the past couple of years and our service is now extending worldwide. We have opened a Global Repair Center in Hong Kong and we have sales, service and representative offices in United States, the Netherlands, United Kingdom, Middle East, Australia, South Africa and South America, offering customers the best service and user experience.

Based on the principle of 'Dedicate work, Enjoy life', INFiLED is striving to be a top brand of LED screen manufacturer to enlighten the world with a visual feast!

www.infiled.com

GP SCREEN is a French company specializing in the integration, design and installation of customized professional audiovisual solutions. Since 2004, the company has been analyzing, designing and installing audiovisual solutions and tools for immersive use, as well as installing and deploying curved screens dedicated to simulators.

www.gp-screen.com

We publish the CarMaker software package for cars, TruckMaker for trucks and MotorcycleMaker for two-wheelers. These simulation platforms are designed to be modular and open, enabling them to be used in Model-In-the-Loop, Software-In-the-Loop, Hardware-In-the-Loop, and Vehicle-In-the-Loop, or even in co-simulation with third-party software. We also adapt our solutions to our customers' ecosystems. We have designed a software architecture that offers a complete library of physical models, for sub-system simulation of the complete vehicle, with its driver and driving environment. This remains open to the integration of third-party models. More than 160 of our customers are positioned across the entire automotive industry. We provide local support through 14 local offices in Asia, the United States and Europe, including our subsidiary in the Paris region of France.

www.ipg-automotive.com

MathWorks is the leading developer of mathematical computing software. Engineers and scientists worldwide rely on our MATLAB® and Simulink® product families to accelerate the pace of discovery, innovation, and development in automotive, aerospace, electronics, financial services, biotech-pharmaceutical, and other industries. MATLAB and Simulink are also fundamental teaching and research tools in the world's universities and learning institutions. Founded in 1984, MathWorks employs more than 6000 people across 34 offices, with headquarters in Natick, Massachusetts, USA.

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- Simulate driving scenarios
- Design planning and control algorithms
- Design perception algorithms
- Deploy algorithms using code generation
- Integrate and test

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Booth n°26

At NI, we Engineer Ambitiously. We celebrate creative problem solving. And we take our customer relationships to heart. We believe in the power and potential of making connections—between people, ideas, and technology. In fact, connection is central to everything we do. We constantly challenge ourselves to find those connections because that's what creates a path forward for you to engineer the extraordinary today, tomorrow, and for the next 100 years.

This means bringing the right people together to build solutions that make a difference. It means combining fresh perspectives with new technologies to turn your vision into reality.

Always aspiring beyond this moment, we're curious and willing to take chances because we know that everything we learn today will guide us into our future. We also know that things don't always go exactly as planned. Some may call that failure, but we see it as a lesson that helps us become stronger, faster, and better. We celebrate those who are comfortable failing because the only way to know if something works is to uncover the ways it doesn't.

www.ni.com



DRIVING SIMULATION

Booth n°28

rFpro is a simulation environment for the automotive and motorsport industries. It is used for the development and testing of autonomous vehicles, ADAS, vehicle dynamics and human factor studies – essentially anything that involves driving a vehicle. rFpro's automotive customers are the world's largest car manufacturers, tier one suppliers and sensor developers. We enable them to simulate, test and validate new sensors, control systems and vehicle hardware systems. The top 10 OEMs that were early adopters of rFpro technology have already launched road cars which started their development, not on a test track, but in a virtual environment using rFpro.

www.rfpro.com



Booth n°42

SCALE-1 PORTAL brings immersive technologies and applications to the global market. Discover highly immersive rooms, mobile virtual reality projector, and a range of business applications & services of virtual, augmented and mixed reality, for the consumer and the Professional.

www.indus.scale1portal.com



Booth n°18

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.

www.sensodrive.de



Booth n°46

Smart Eye is the global leader in Human Insight AI, technology that understands, supports and predicts human behavior in complex environments. Bridging the gap between humans and machines for a safe and sustainable future. Smart Eye was founded in 1999, is publicly traded and headquartered in Sweden with offices in the US, UK, Germany, Denmark, Egypt, Japan, Singapore and China.

Through our Research Instruments, Smart Eye offers the world's most advanced eye tracking systems for analyzing human behavior. Offering unparalleled performance in complex environments, our carefully crafted instruments enable unparalleled insights into human behavior and human-machine interaction in automotive, aviation, assistive technology, media & marketing, behavioral science and many more fields.

www.smarteye.se



Booth n°39

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www.irt-systemx.fr



Booth n°45

Thierry CLEMOT's company creates 3D environments for cars simulators. Real environments are created from high accuracy 3D Laser Scan. Available quickly, our 100 km urban model "CITY" allows us to create every exercises needed in fictive environments.

Today, our models are used by cars manufactures in the US, Asia or Europe, what about you?

Don't hesitate to consult the database catalog on thierryclemot.com

www.thierryclemot.com



TRIANGRAPHICS

Booth n°23

With our powerful proprietary software tools and our long experience in 3D terrain development, we are pushing the boundaries of the simulation and automotive market when it comes to detail, quality, size, efficiency and realism of digital environments. Use our flagship product Trian3DBuilder to create photo-realistic 3D terrains by automatically processing real-world data or using procedural approaches.

www.triangraphics.com

Safety Pool™ Scenario Database is the world's largest public database of scenarios for Automated Driving System testing, validation, and certification. It was founded by Deepen AI and WMG, University of Warwick, UK. This database is a global initiative for certifiable AV Safety that is informed by industry needs, embraced by regulators, and recognised by governments worldwide.

The Verification and Validation (V&V) team's research at WMG focuses on the entire V&V pipeline for Automated Driving including test scenarios, simulation-based testing, safety argumentation and is influencing international standards and policies to enable a safe introduction of Automated Vehicles. As a leading academic research team, we collaborate with international and local policymakers, regulators, and industrial partners on various research projects and policy implementations across the verification and validation spectrum.

www.safetypool.ai

As UTAC, we are a market-leading group in vehicle testing, type approval and emerging technologies for autonomous, connected and electric vehicles. We provide services and systems to customers in the automotive, transport, tyre, petrochemical and defence industries. We deliver regulation and homologation support, specialist vehicle conversions and test systems as well as training, consulting, audit and certification, technical inspection, standardisation and events. Formed in 2021 after UTAC CERAM and Millbrook merged their operations, we now operate 8 test centres across France, the UK, the USA and Northern Finland, with a 9th due to open in Morocco in late 2021. We have subsidiaries in Russia, China, Japan and Germany and employ 1280 people globally.

www.utac.com

VI-grade is the global provider of disruptive vehicle development solutions that are paving the way to developing vehicles with Zero Prototypes. Its human-centric solutions comprise industry-leading real-time simulation software, professional driving simulators and Hardware-in-the-Loop solutions that accelerate product development across the transportation industry.

The company's suite of scalable driving simulators covers a wide performance range to assess the multi-disciplinary driving experience. These proven solutions enable OEMs, suppliers, research centers, motorsport teams and universities to reduce physical prototypes while accelerating innovation in their quest to get ever nearer to achieving the ultimate development goal of Zero Prototypes.

VI-grade is part of HBK's Virtual Test Division, which focuses on providing real-time software, simulator, and hardware-in-the-loop solutions to virtually test products throughout the development cycle, helping companies accelerate innovation and reduce time-to-market, and improve their competitive advantage.

Since September 2018, VI-grade has been part of Spectris plc. The firm conducts business in four major segments – materials analysis, testing & measurement, in-line instrumentation and industrial controls – and serves a broad range of industries ranging from automotive and aerospace to electronics, energy, mining and pharmaceuticals.

www.vi-grade.com



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
- **organize special interest groups** (SIG) Driving Simulation Experience (SIGDSEP)
- **inform** about recent events new and trends

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