Online Certificate Course

SIMULATION OF AUTOMATED VEHICLES

Diploma of Advanced Studies

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MOTIVATION

Turning the vision of autonomous driving into reality requires a fundamental digital transformation which forces engineers to face multidimensional and interdisciplinary challenges. Computer simulation offers a key technology for handling these complex tasks and will be a game changer as a strategic element of product lifecycle. But more than ever before, agile, cross-company and cross-border digital processes are required. This also places new demands on the workflow and knowledge of simulation experts. Our ENVITED academy Certificate Course "Simulation of Automated Vehicles" will provide you with a comprehensive overview and cross-disciplinary context of a data-driven simulation process for the virtual development and validation of automated vehicles.

COURSE DESCRIPTION

Our certificate course takes an application-oriented look at the requirements of current and future data-driven simulation processes. In the context of virtual 3D worlds, technologies from data acquisition to processing, analysis and quality assessment will be presented. Participants will gain insight about different sensor types as well as methods for sensor fusion, integration, modeling, simulation, validation and artificial intelligence approaches. On the way to the simulation of Advanced Driver Assistance Systems (ADAS) and their driving functions, basics of scenario description, traffic flow and agent models are covered. The course builds on standardization projects such as ASAM OpenX and covers open source software approaches to simplify participants' entry into the field and community.
Experienced lecturers from Science and Industry will teach approaches to co-simulation, credible simulation and virtual testing, as well as technologies for studies and experiments in the driving simulator environment. Distributed ledger technologies will be introduced to participants as one possible technology on the path to data traceability and trust for continuous proof of virtual validation. Take advantage of your opportunity for professional development and networking and join our community for an interactive and forward-looking online course.

**MODULES**

**MODULE A: Overview & Virtual 3D Environments**
A1  Overview Simulation Ecosystem  
A2  Mobile Mapping & Data Processing  
A3  Data Analysis & HD Maps  
A4  City Models  
A5  3D Environment  
A6  Material Models / OpenMaterial

**MODULE B: Sensors**
B1  Sensor Basics  
B2  Sensor Fusion & Integration  
B3  Sensor Simulation  
B4  FMI + OSI  
B5  Sensor Model Validation  
B6  SiL Simulation (Component)  
B7  AI for AD / Sensor Processing

**MODULE C: Scenarios & Driving Functions**
C1  Scenario Design  
C2:  Traffic Simulation / Agent Models  
C3:  ADAS Simulation  
C4:  SSP  
C5:  Co-Simulation
C6: Credible Simulation
C7: AV Software

MODULE D: Virtual Test & Certification

D1 Scenario Test Automation & Validation
D2 Driving Simulator Technologies I
D3 Driving Simulator Technologies II
D4 Test vs. Simulation
D5 Functional Safety
D6 Distributed Ledger Technologies I
D7 Distributed Ledger Technologies II

LECTURERS

Lutz Morich (Audi AG)
Marina Reiter (3D Mapping Solutions GmbH)
Dragana Tosic (3D Mapping Solutions GmbH)
Florian Günther (3D Mapping Solutions GmbH)
Maximilian Sindram (virtualcitysystems GmbH)
Mirco Nierenz (Triangraphics GmbH)
Dr. Ludwig Friedmann (BMW AG)
Jürgen Wille (FrontMod GmbH)
Pierre Mai (PMSF IT Consulting)
Clemens Linnhoff (TU Darmstadt)
Phillip Rosenberger (TU Darmstadt)
Dr. Hardi Hungar (DLR)
Dr. Martin Fischer (DLR)
Dr. Raphael Pfeffer (IPG Automotive GmbH)
Christopher Wiegand (dSpace GmbH)
Peter Lobner (eXXcellent solutions GmbH)
Dr. Martin Benedikt (Virtual Vehicle Research)
Prof. Daniel Watzenig (Virtual Vehicle Research)
Markus Schratter (Virtual Vehicle Research)
Jann-Eve Stavesand (dSpace GmbH)
Dr. Jens Häcker (SSC)
Carlo van Driesten (BMW AG)
Prof. Florian Matthes (TUM)
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<tr>
<th><strong>AT A GLANCE</strong></th>
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<tbody>
<tr>
<td><strong>Degree</strong></td>
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<tr>
<td>Diploma of Advanced Studies (Certificate Course)</td>
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<tr>
<td><strong>Study Mode</strong></td>
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<tr>
<td>part-time, live online</td>
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<td><strong>Period of Study</strong></td>
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<td>9 months, ~120 training hours</td>
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<td><strong>Study Organizations</strong></td>
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<td>SCMT GmbH / School of Management and Technology (SMT) of Steinbeis Hochschule Berlin (SHB)</td>
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<td><strong>Language of Instructions</strong></td>
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<tr>
<td>English</td>
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<td><strong>Examination Mode</strong></td>
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<tr>
<td>one online case presentations per module (four total) + one written scientific / transfer work</td>
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<td><strong>Number of Participants</strong></td>
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<td>at least 10</td>
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<td><strong>Requirements for Admission</strong></td>
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<td>University entrance qualification or professional qualification</td>
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<td><strong>Study Fees</strong></td>
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<td>6.400 € + VAT for members of asc(s e.V.</td>
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<td>8.000 € + VAT regular</td>
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WHO SHOULD TAKE PART?

The Certificate Course "Simulation of Automated Vehicles" is aimed at professionals and young experts in the automotive engineering industry, who like to qualify for activities in the simulation of automated vehicles and/or link existing knowledge in the overall context:

- Beginners and cross-starters
- Development and software engineers
- Project leaders
- Business developers
- Employees in software and consulting companies

with focus on

- Advanced Driver Assistance Systems (ADAS)
- Automated and Autonomous Driving
- Virtual Test / Test Fields
- Vehicle Electronics
- Mechatronics
- Software Development
- System Development
- Product Development

More Information:
www.envited.market/envited-academy

CONTACT

ASC(S)
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